

Fig. 1

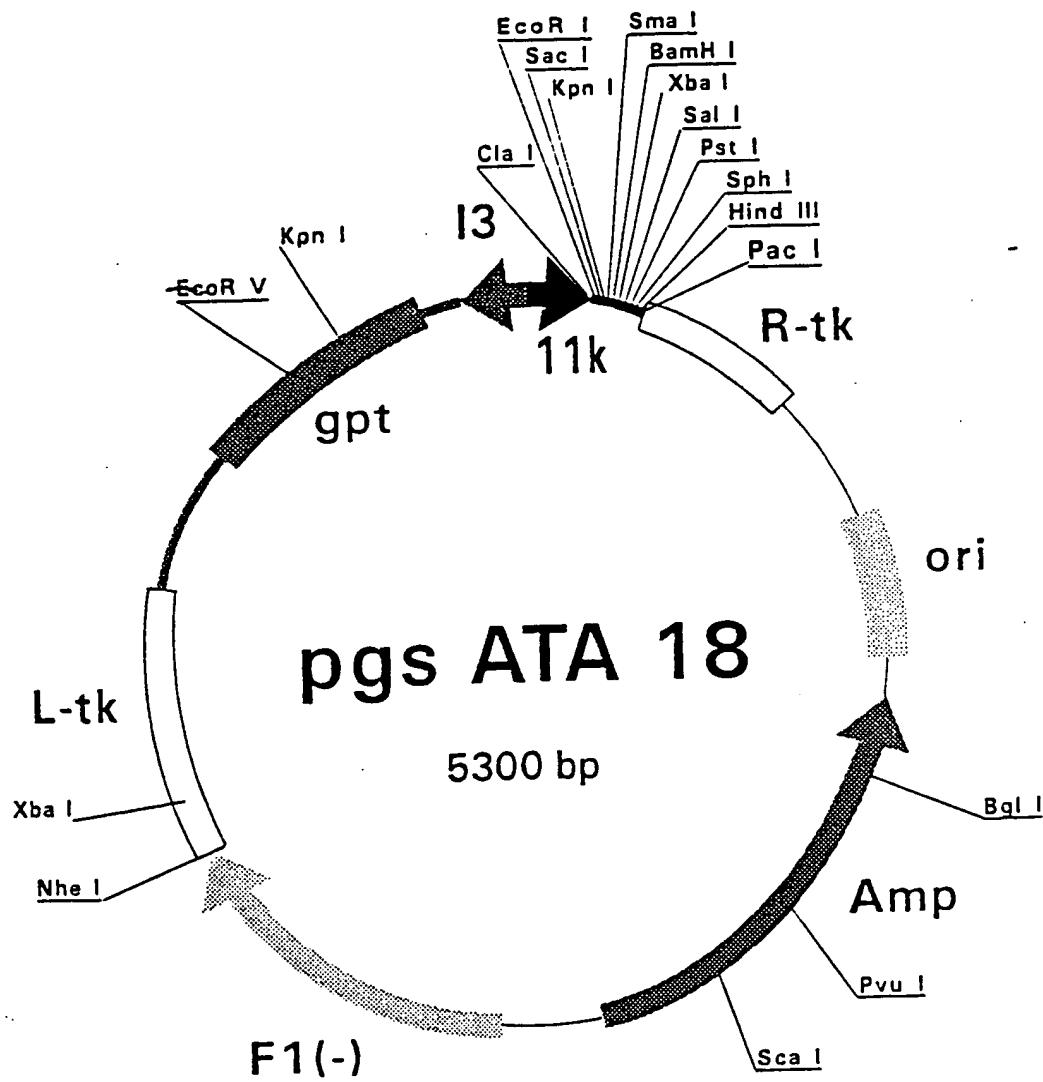


Fig. 2

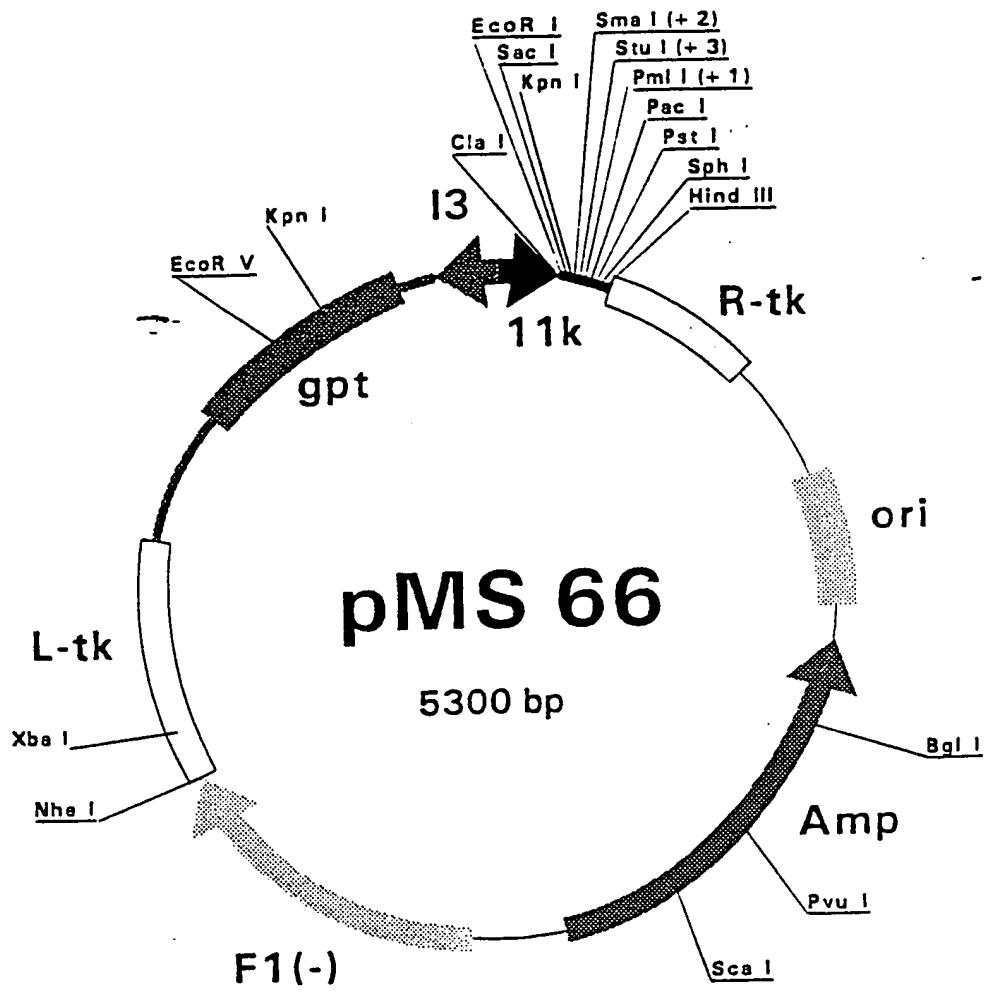


Fig. 3

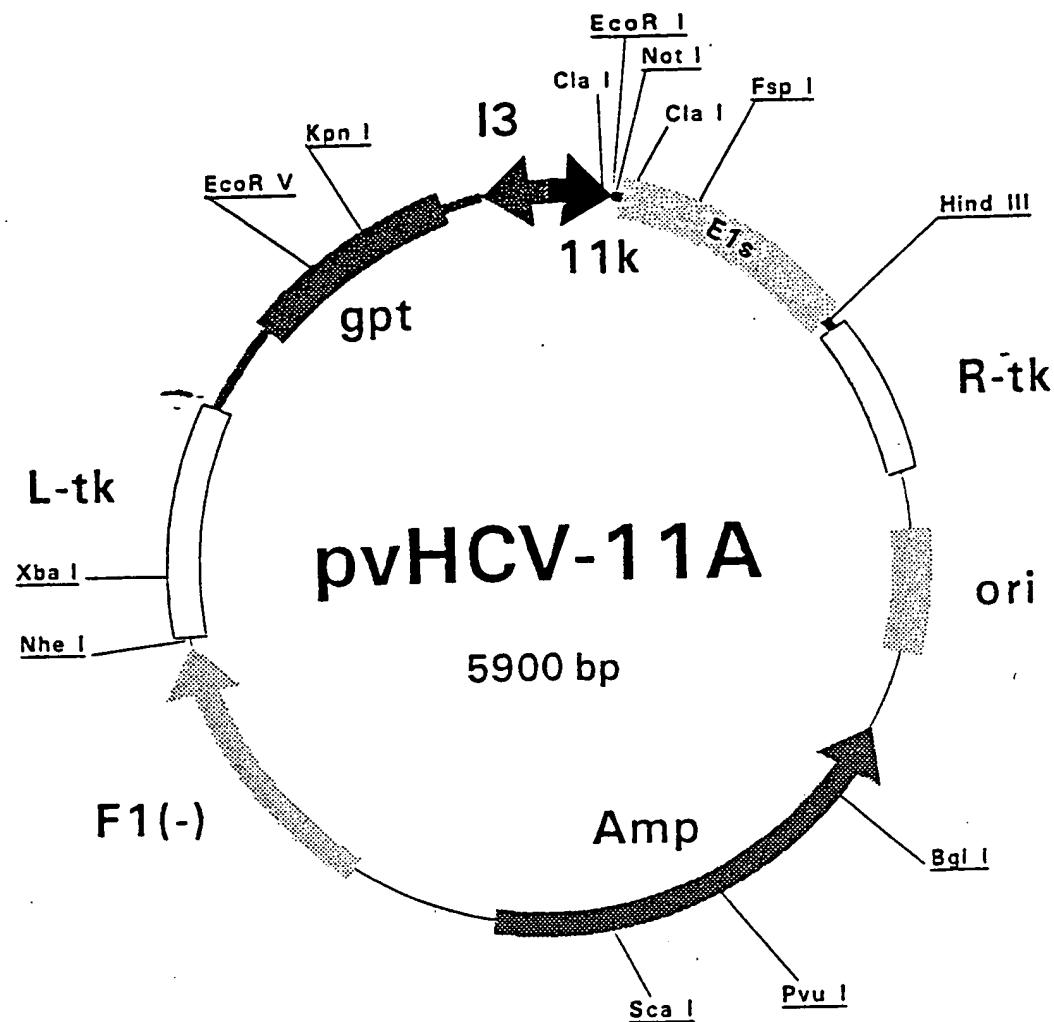
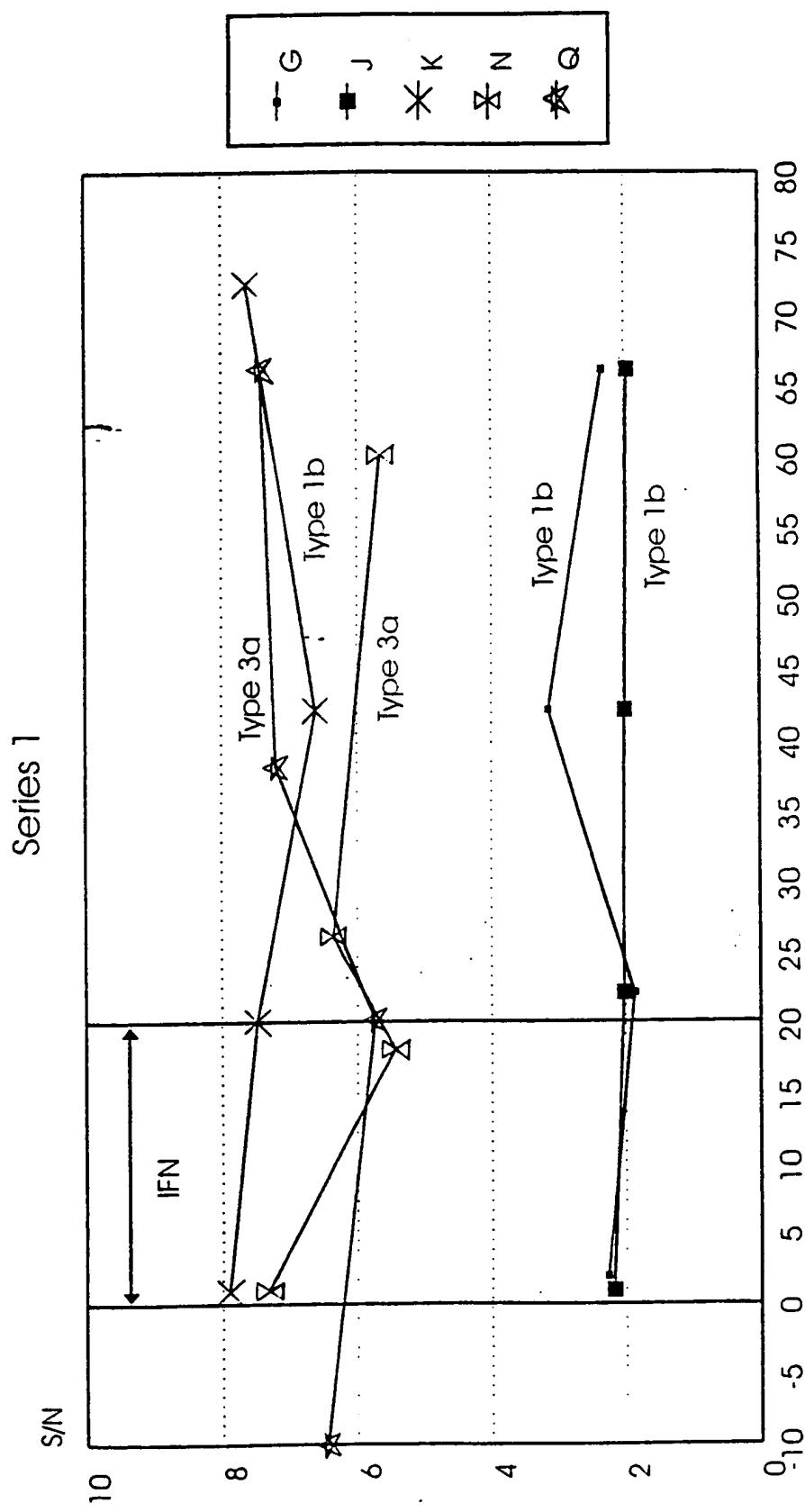


Fig. 4

Anti-E1 levels in NON-responders to IFN treatment



weeks after start of treatment

Fig. 5

Anti-E1 levels in RESPONDERS to IFN treatment

SERIES 1

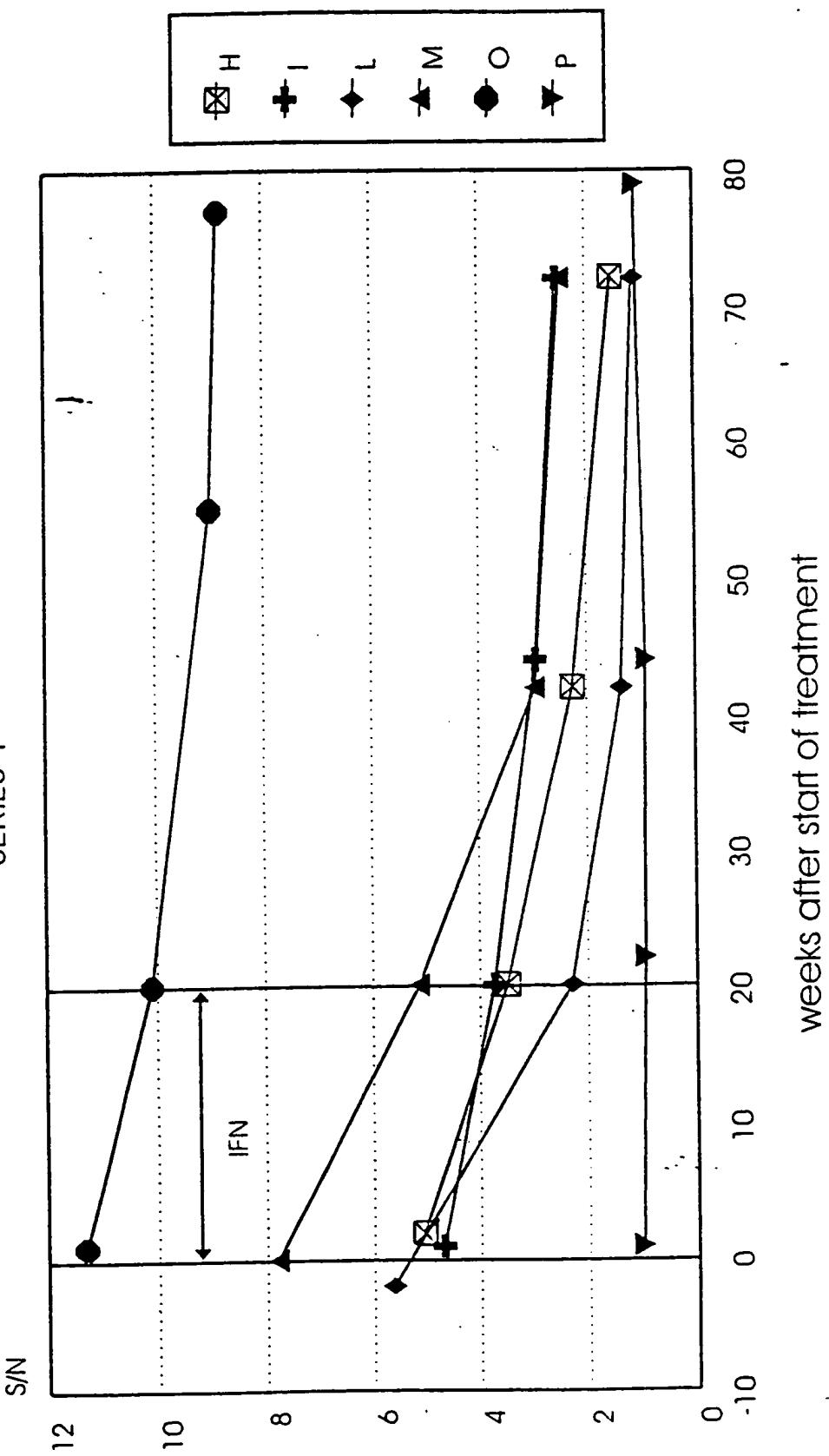


Fig. 6

Anti-E1 levels in patients with COMPLETE response to IFN
SERIES 2

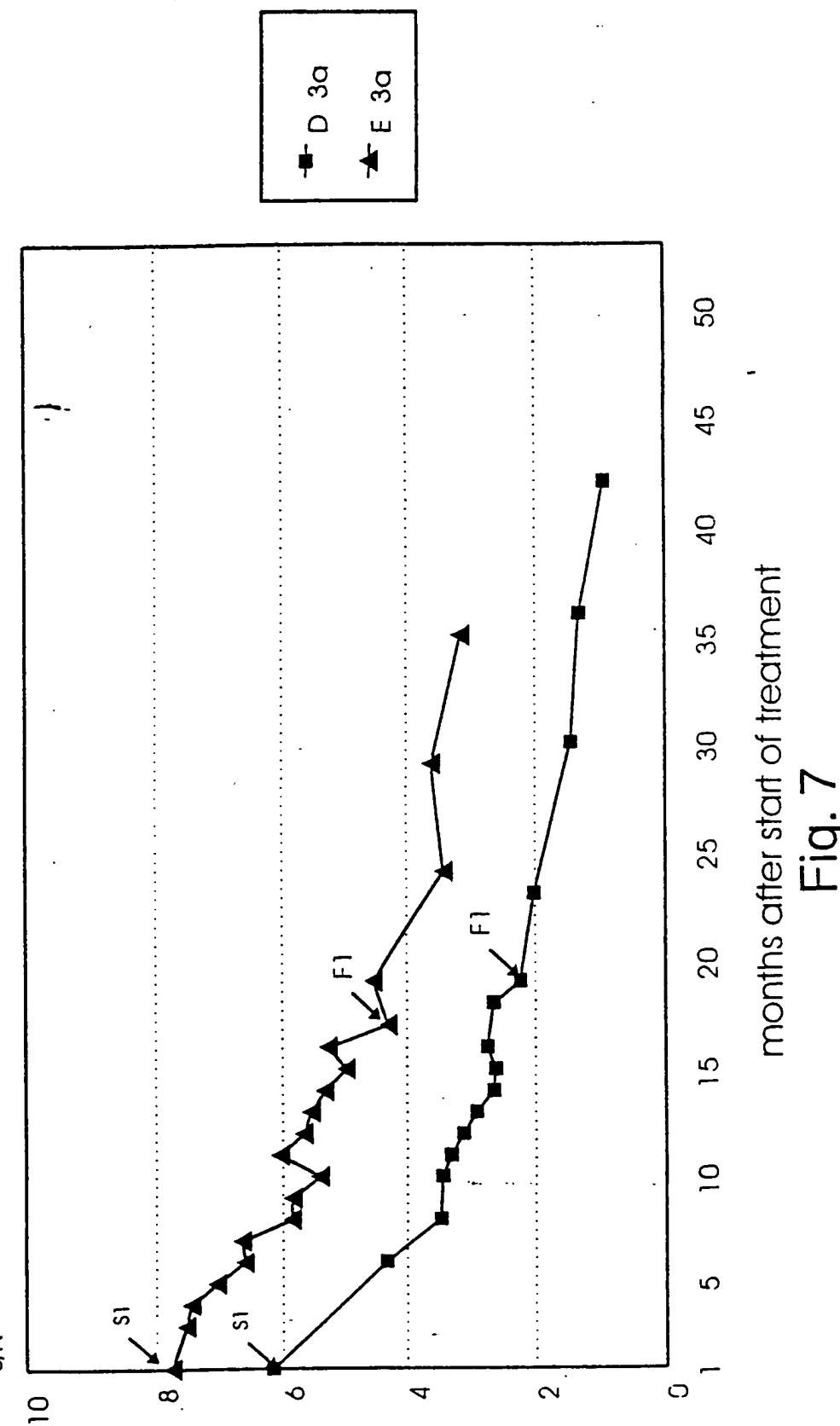
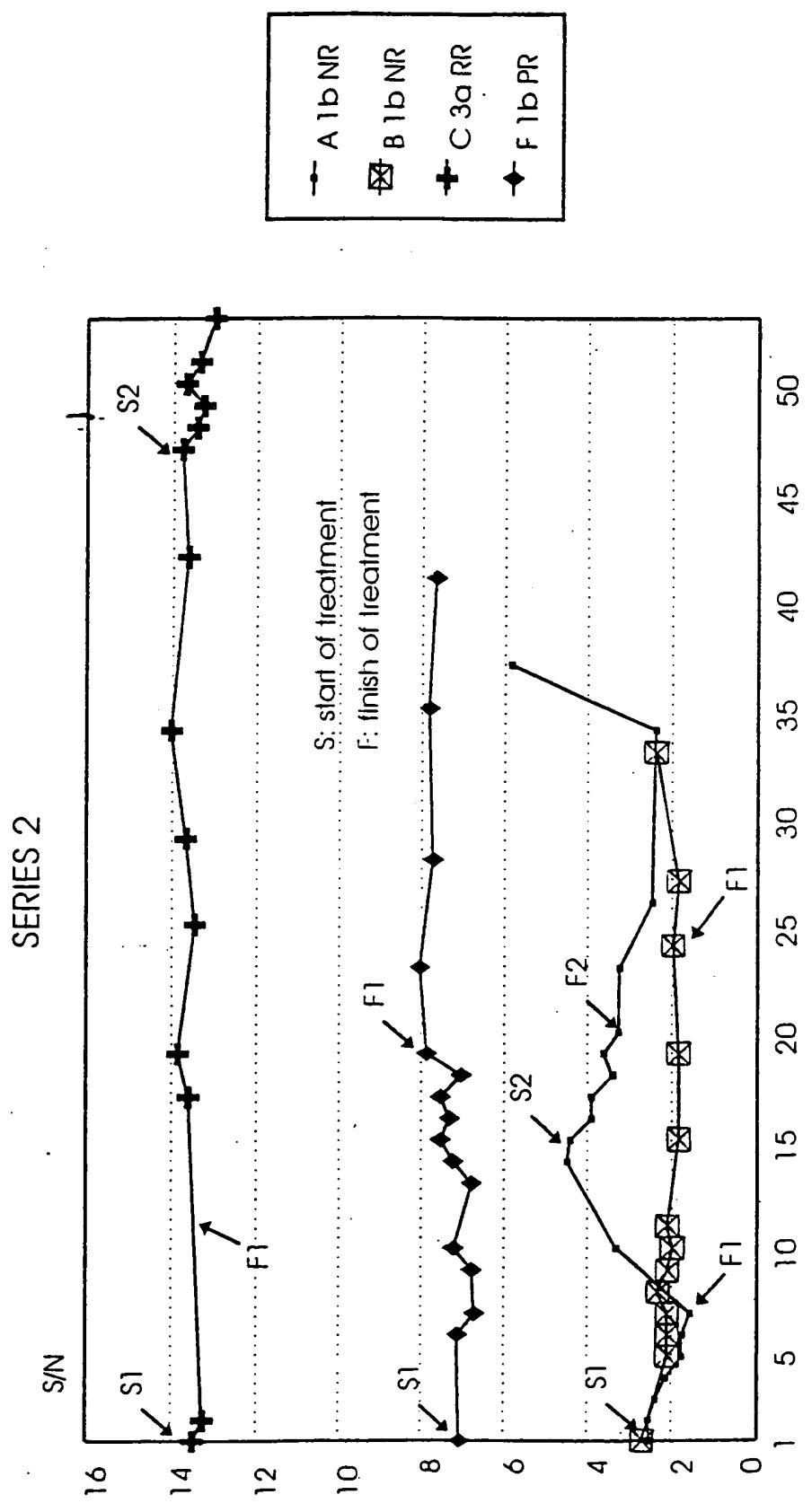


Fig. 7

Anti-E1 levels in INCOMPLETE responders to IFN treatment



months after start of treatment

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Anti-E2 levels in NON-RESPONDERS to IFN treatment

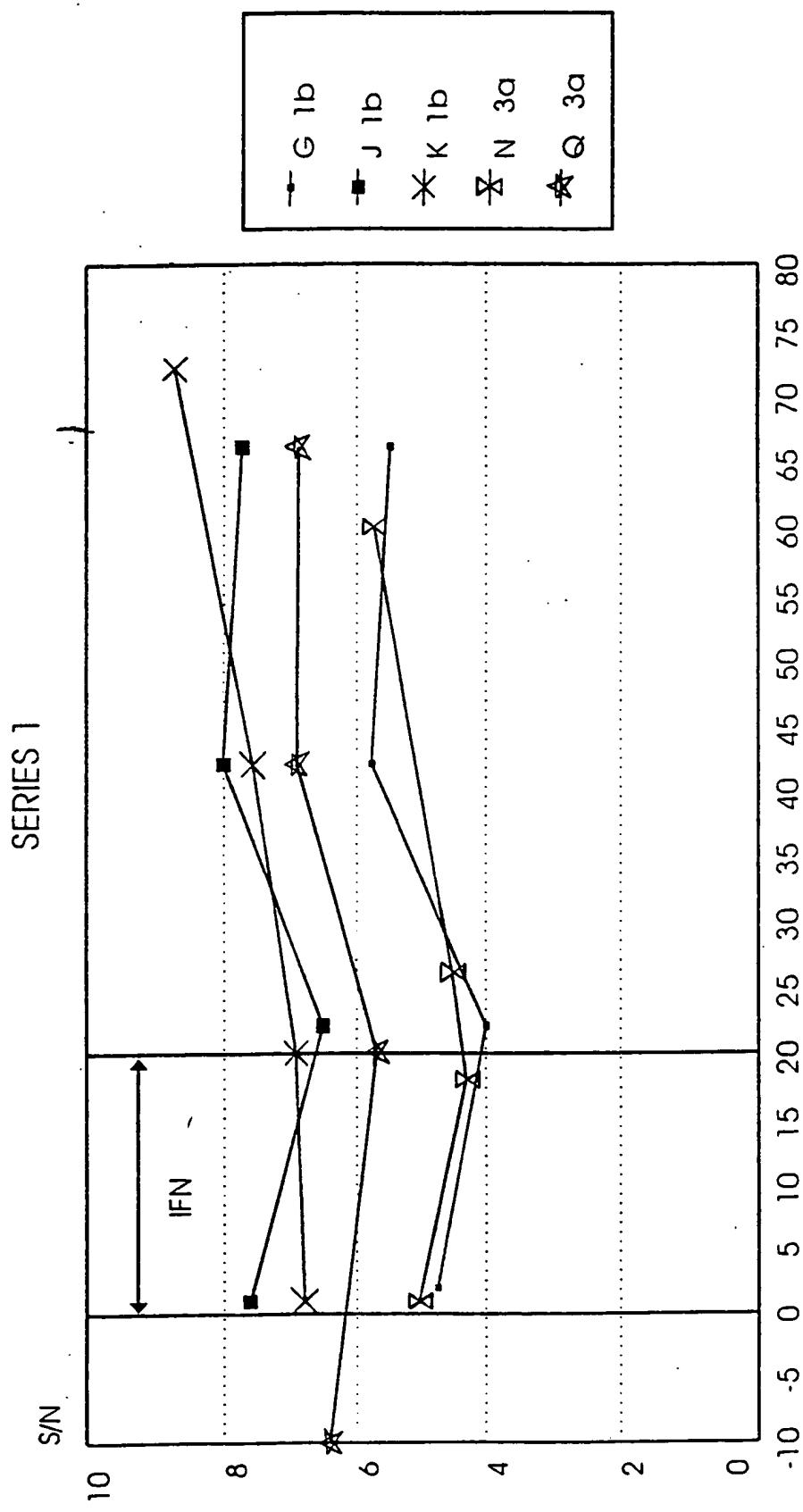
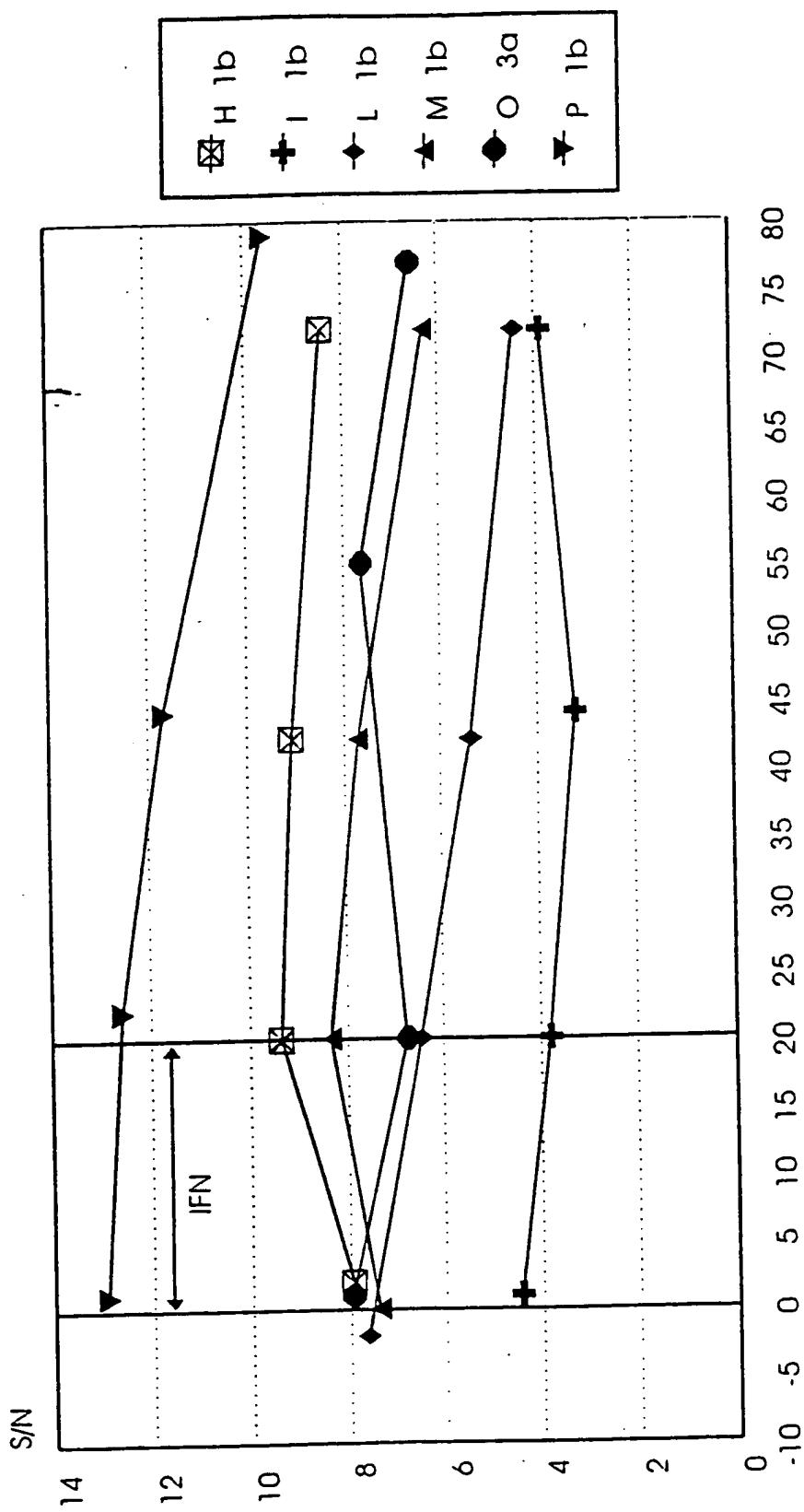


Fig. 9

Anti-E2 levels in RESPONDERS to IFN treatment

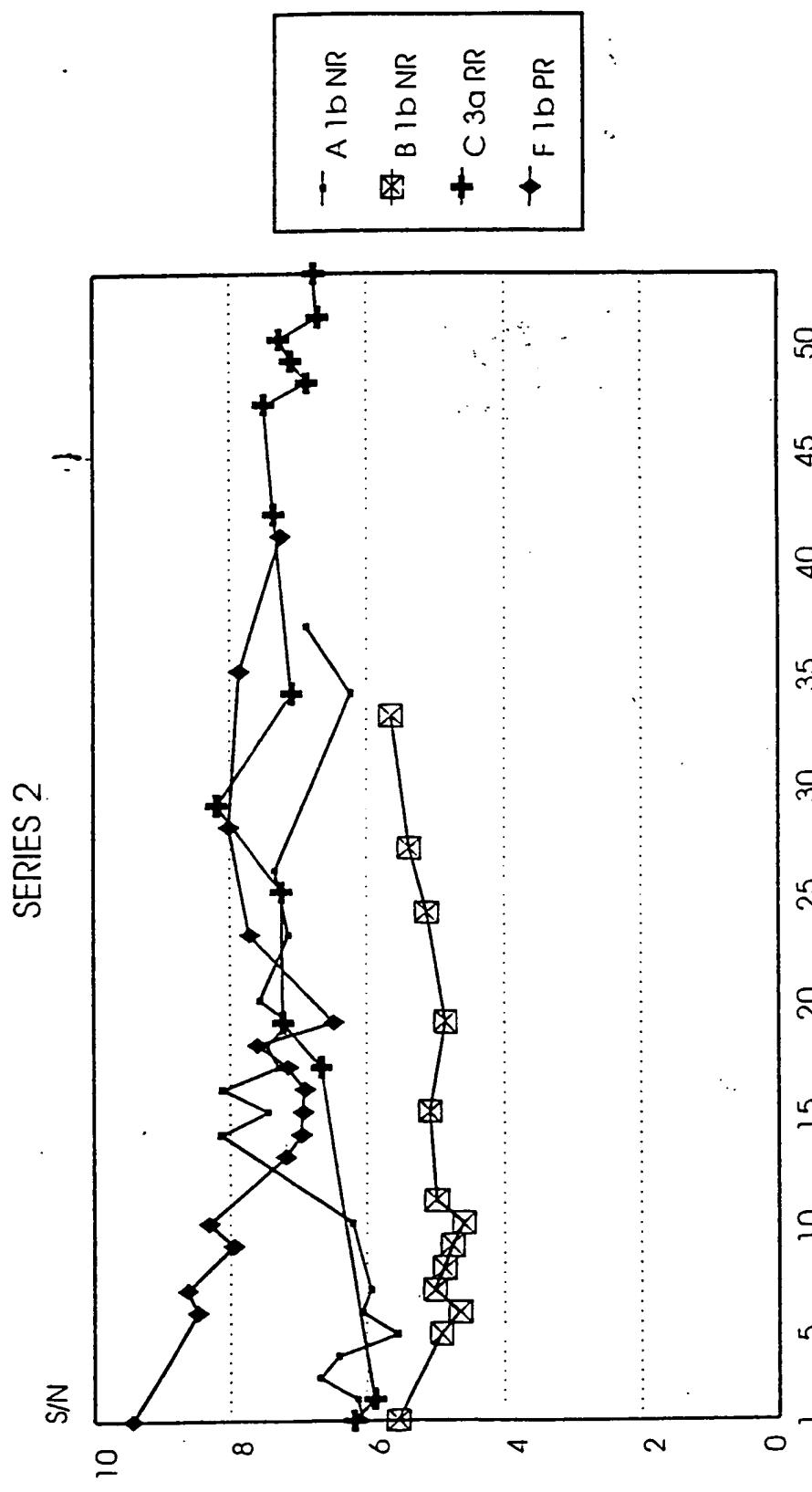
SERIES 1



weeks after start of treatment

Fig. 10

Anti-E2 levels in INCOMPLETE responders to IFN treatment



months after start of treatment

Fig. 11

Anti-E2 levels in COMPLETE responders to IFN treatment

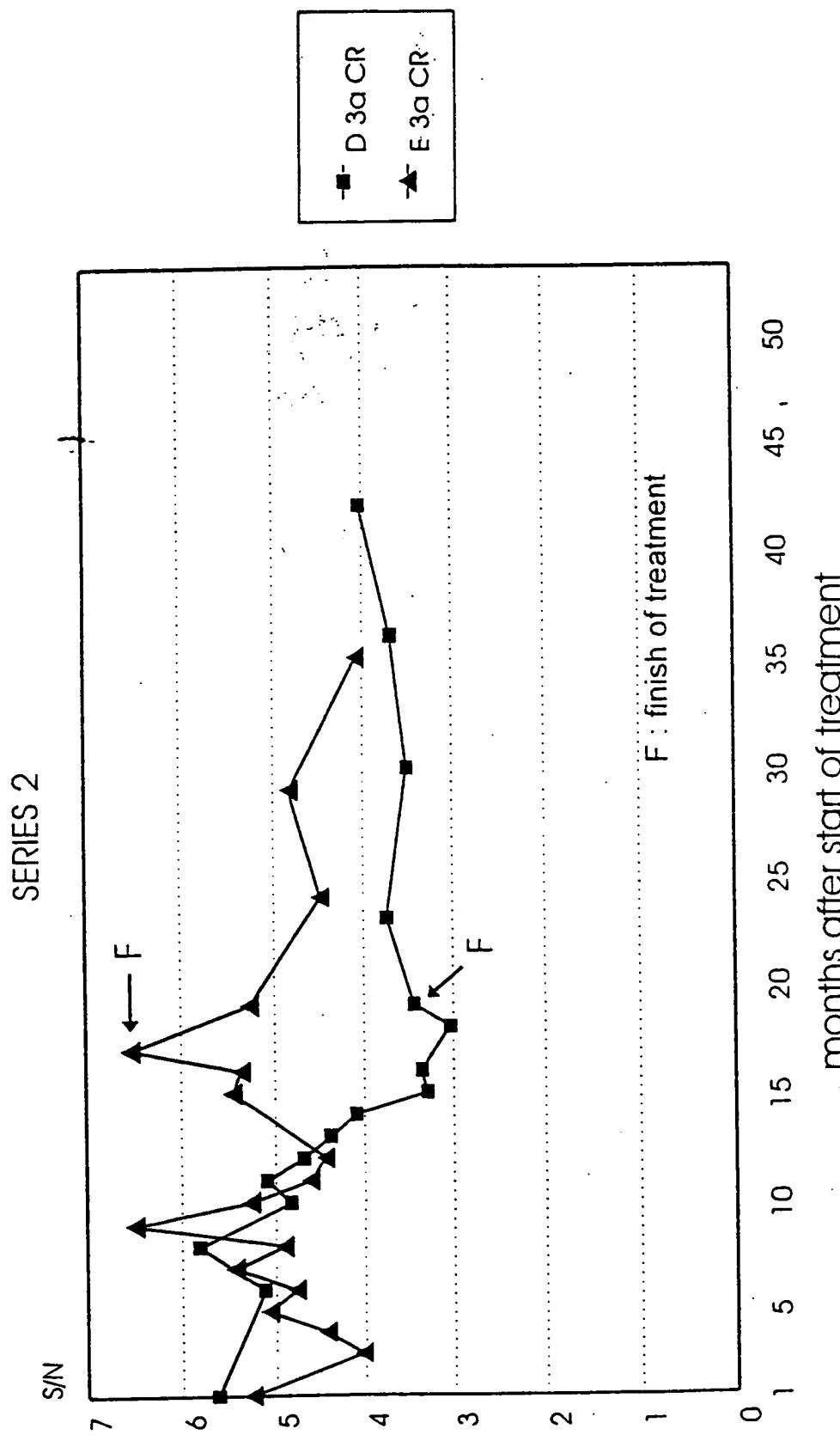


Fig. 12

Human anti-E1 reactivity competed with peptides

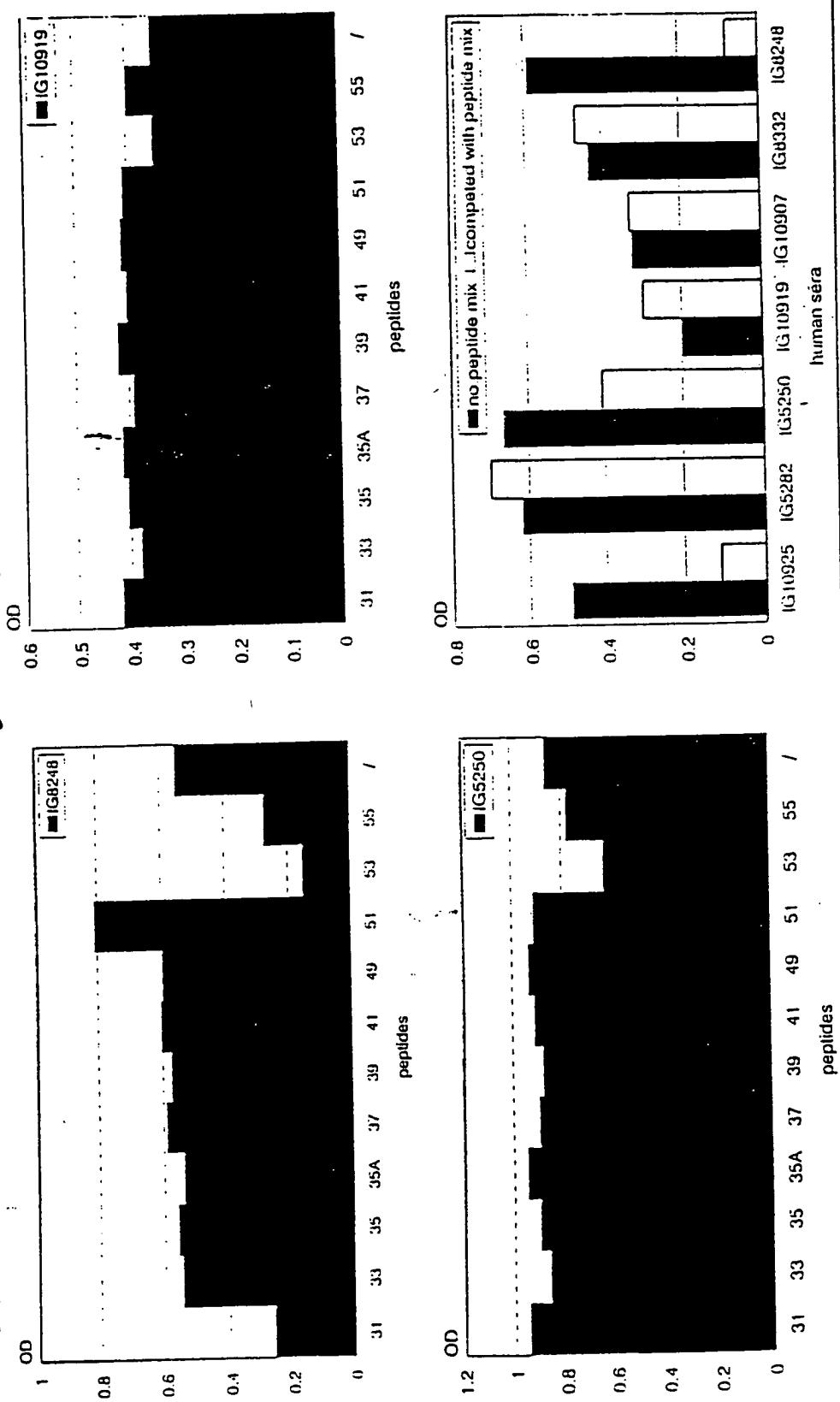


Fig.13

Competition of reactivity of anti-E1 Mabs with peptides

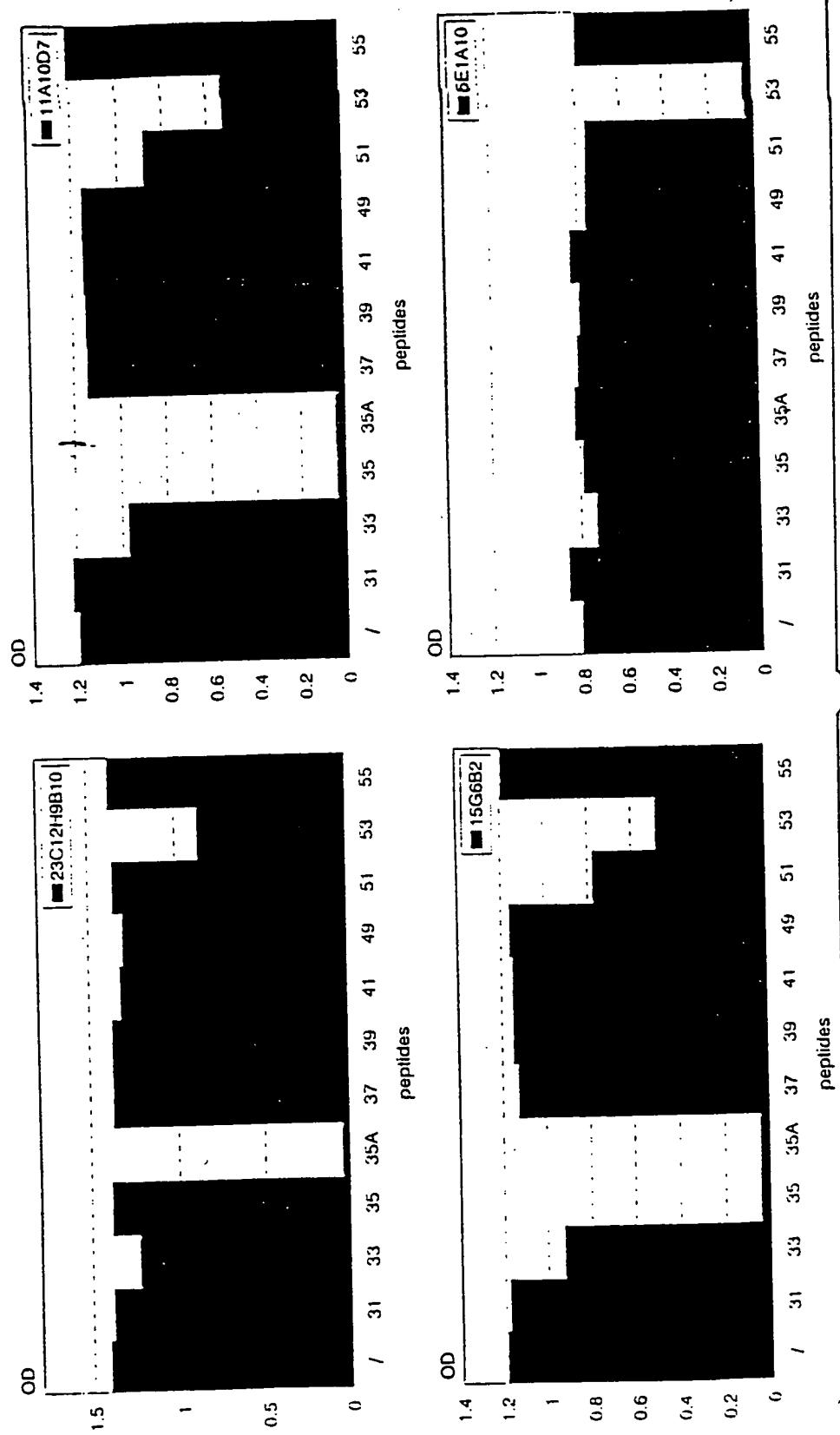


Fig.14

Anti-E1 (epitope 1) levels in NON-RESPONDERS to IFN treatment

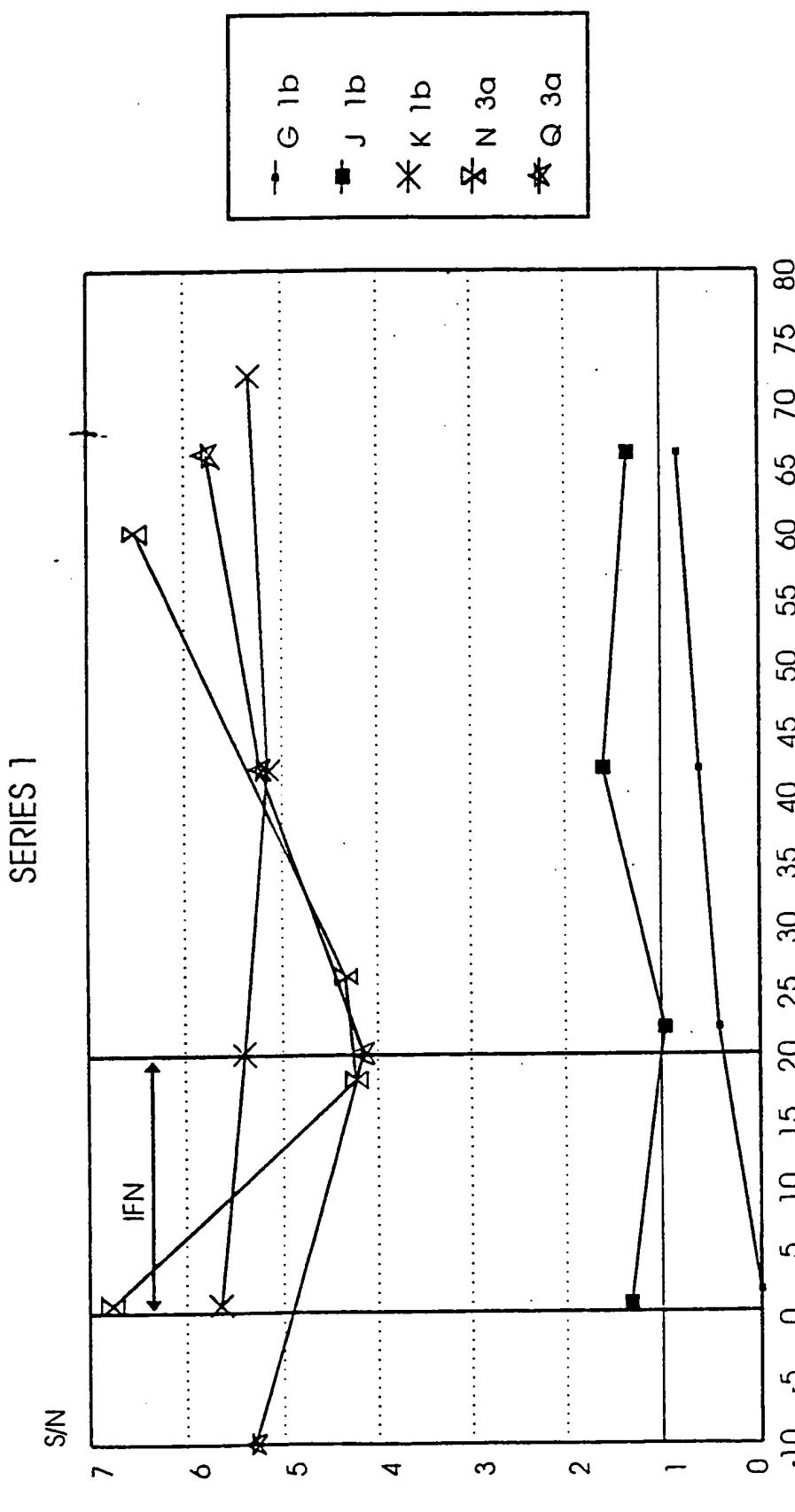


Fig. 15

Anti-E1 (epitope 1) levels in RESPONDERS to IFN treatment

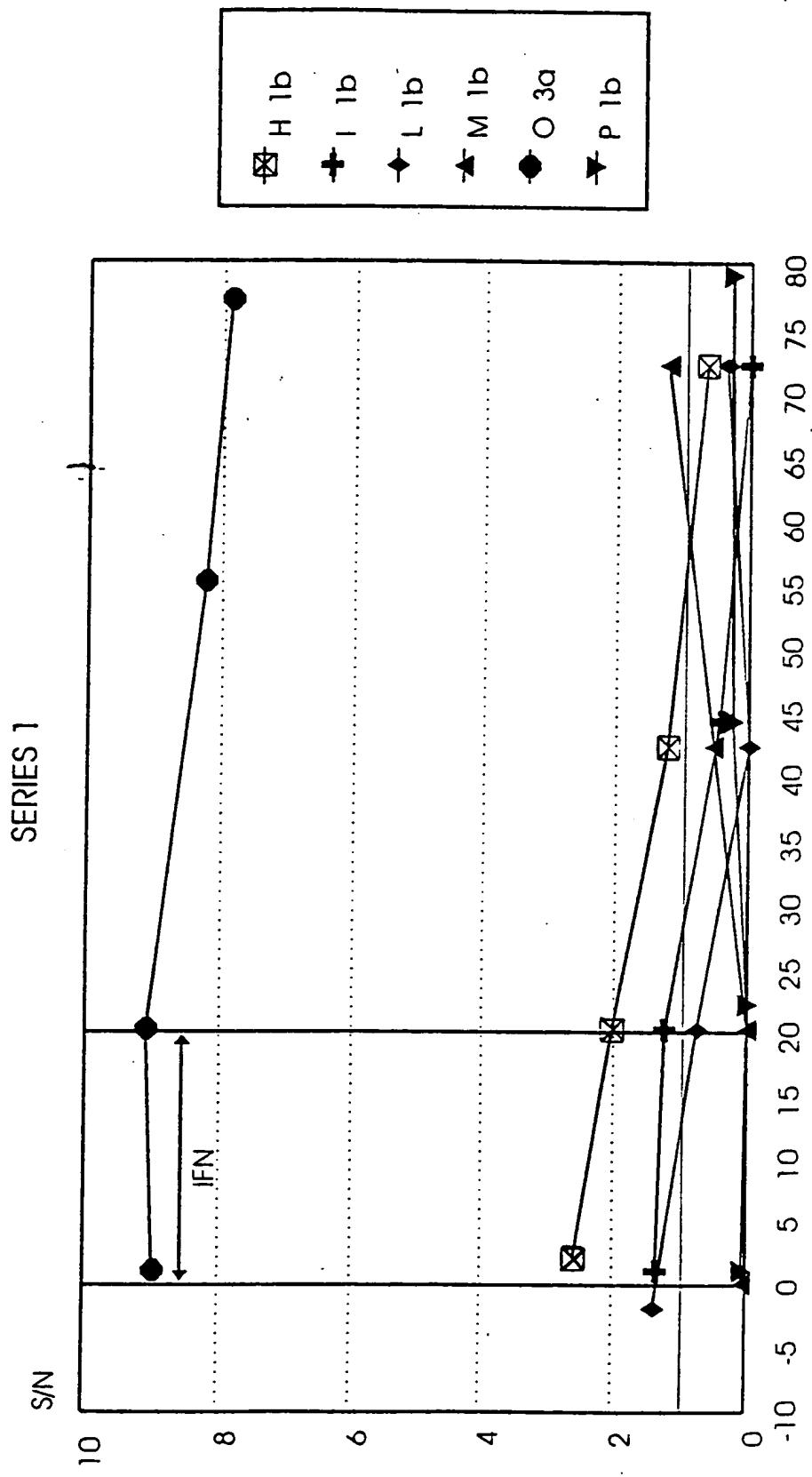
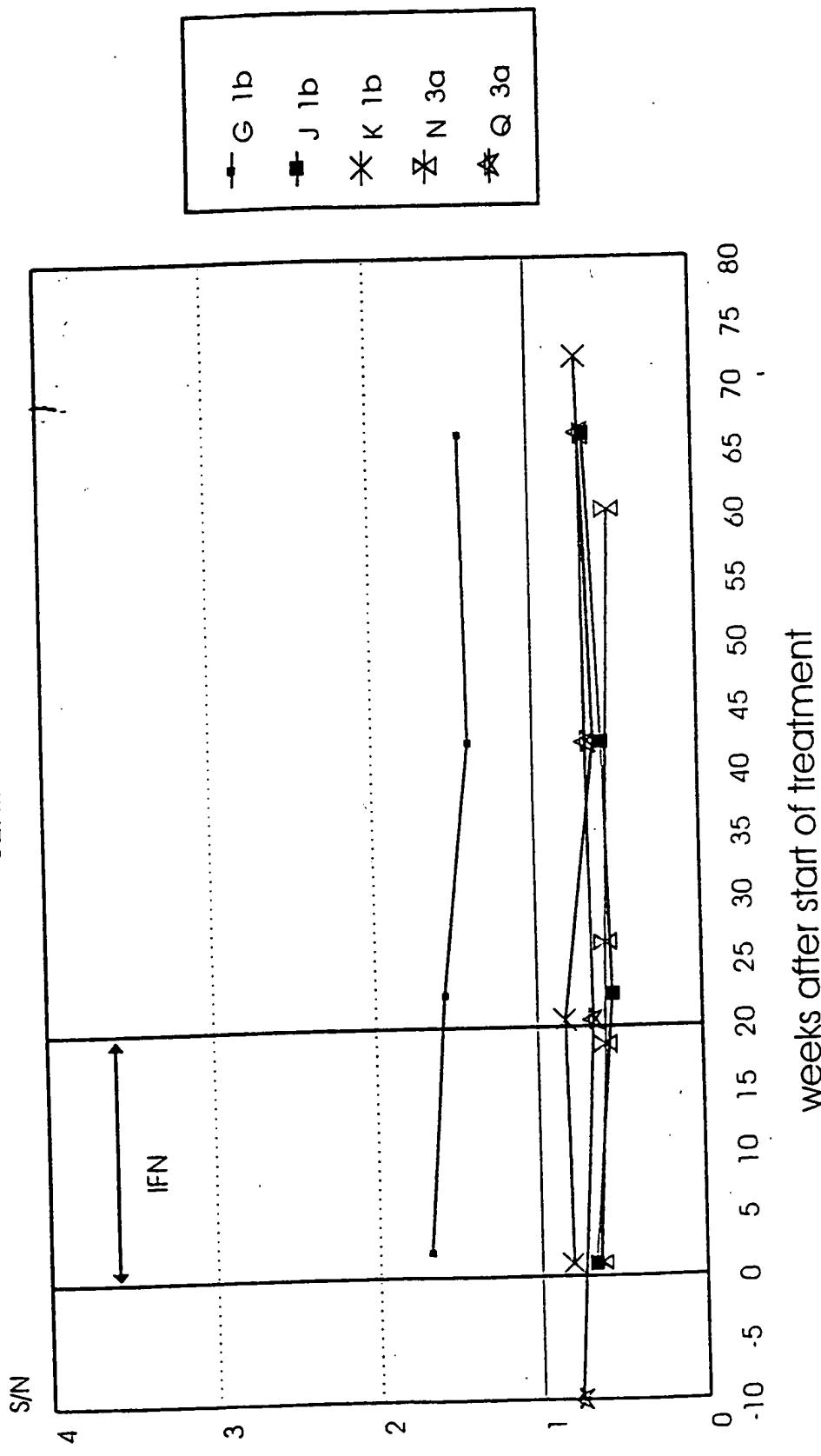


Fig. 16 weeks after start of treatment

Fig. 16

Anti-E1 (epitope 2) levels in NON-RESPONDERS to IFN treatment

SERIES 1

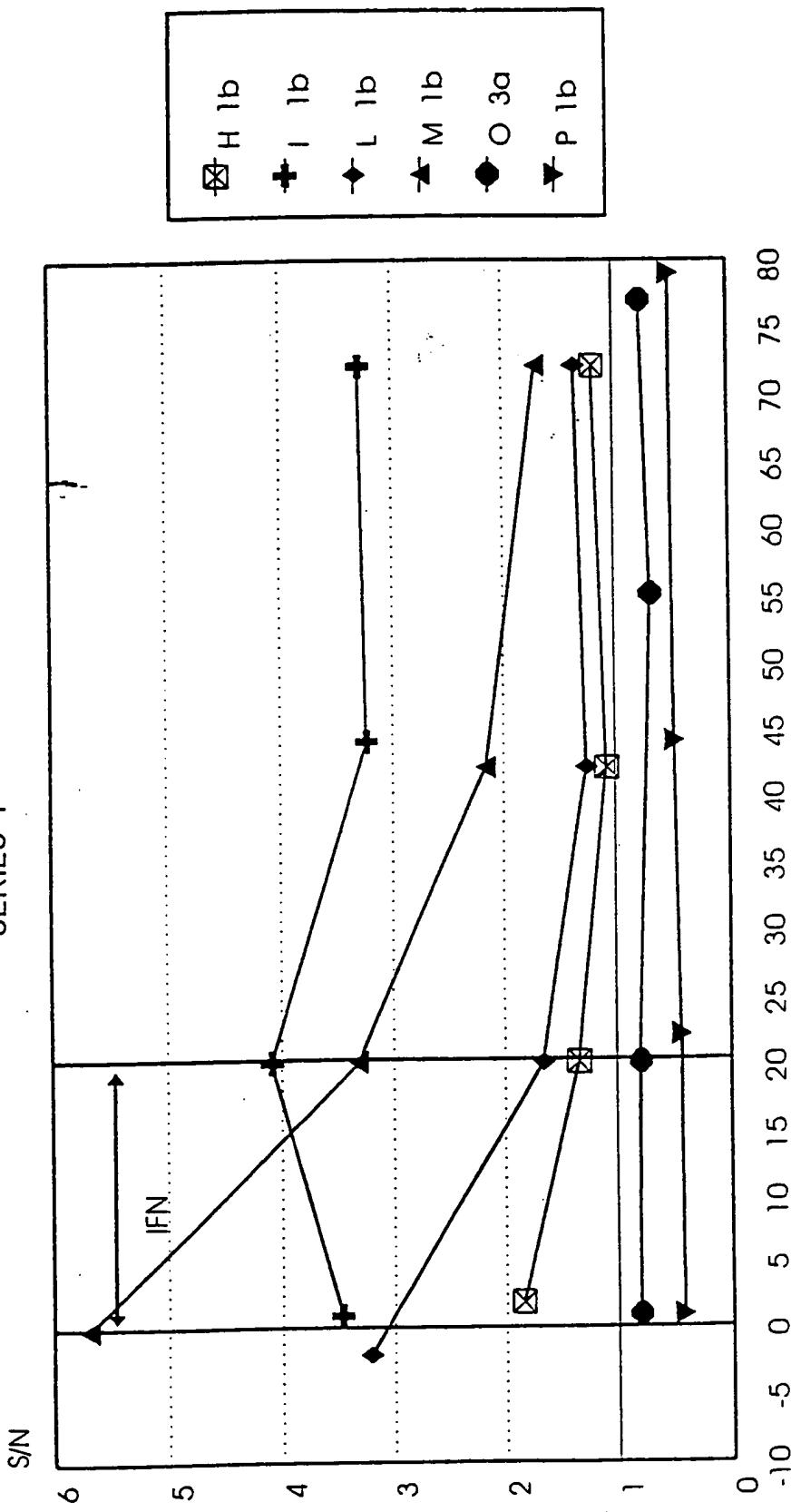


weeks after start of treatment

Fig. 17

Anti-E1 (epitope 2) levels in RESPONDERS to IFN treatment

SERIES 1



weeks after start of treatment

Fig. 18

Competition of reactivity of anti-E2 Mabs with peptides

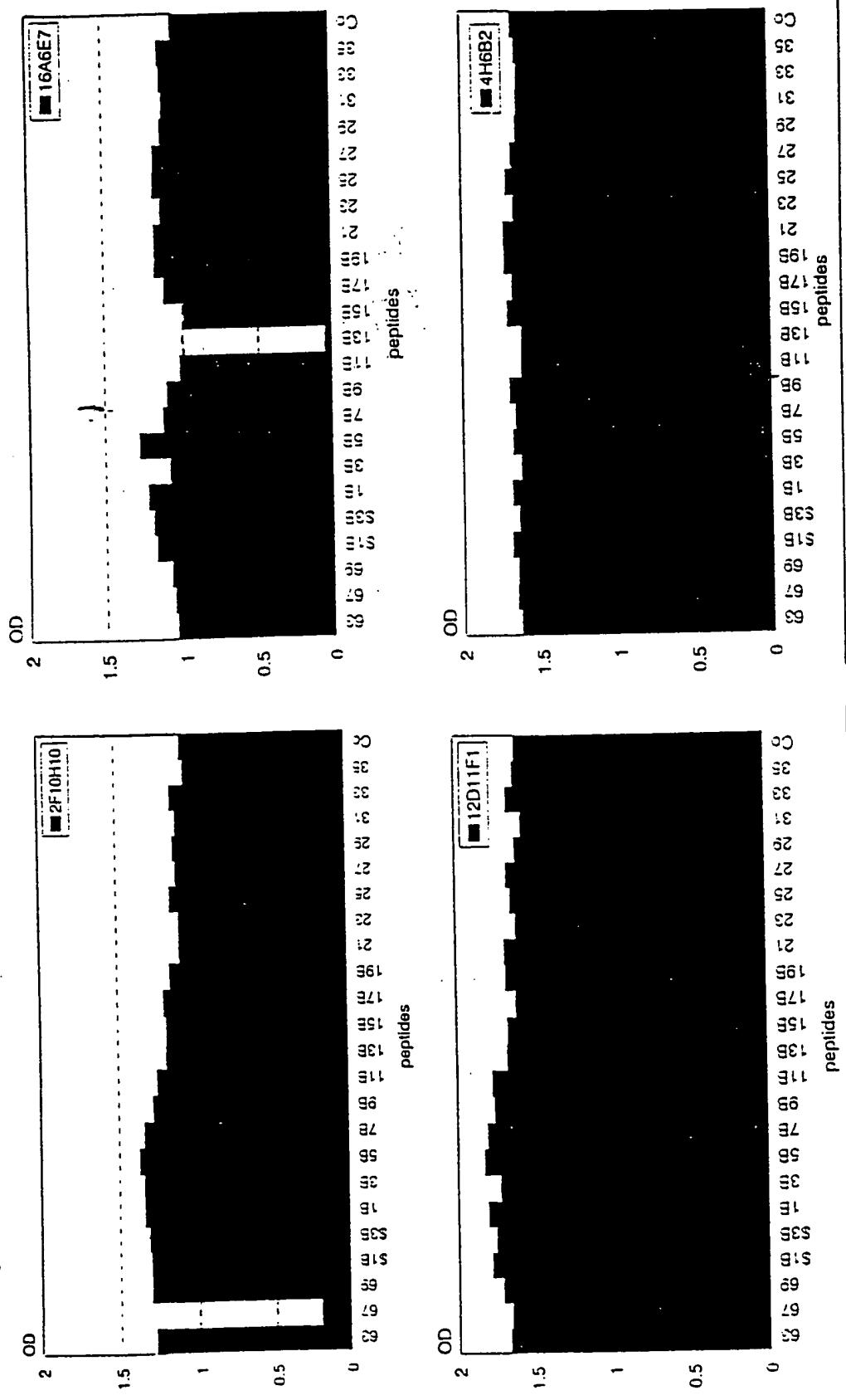


Fig.19

Human anti-E2 reactivity competed with peptides

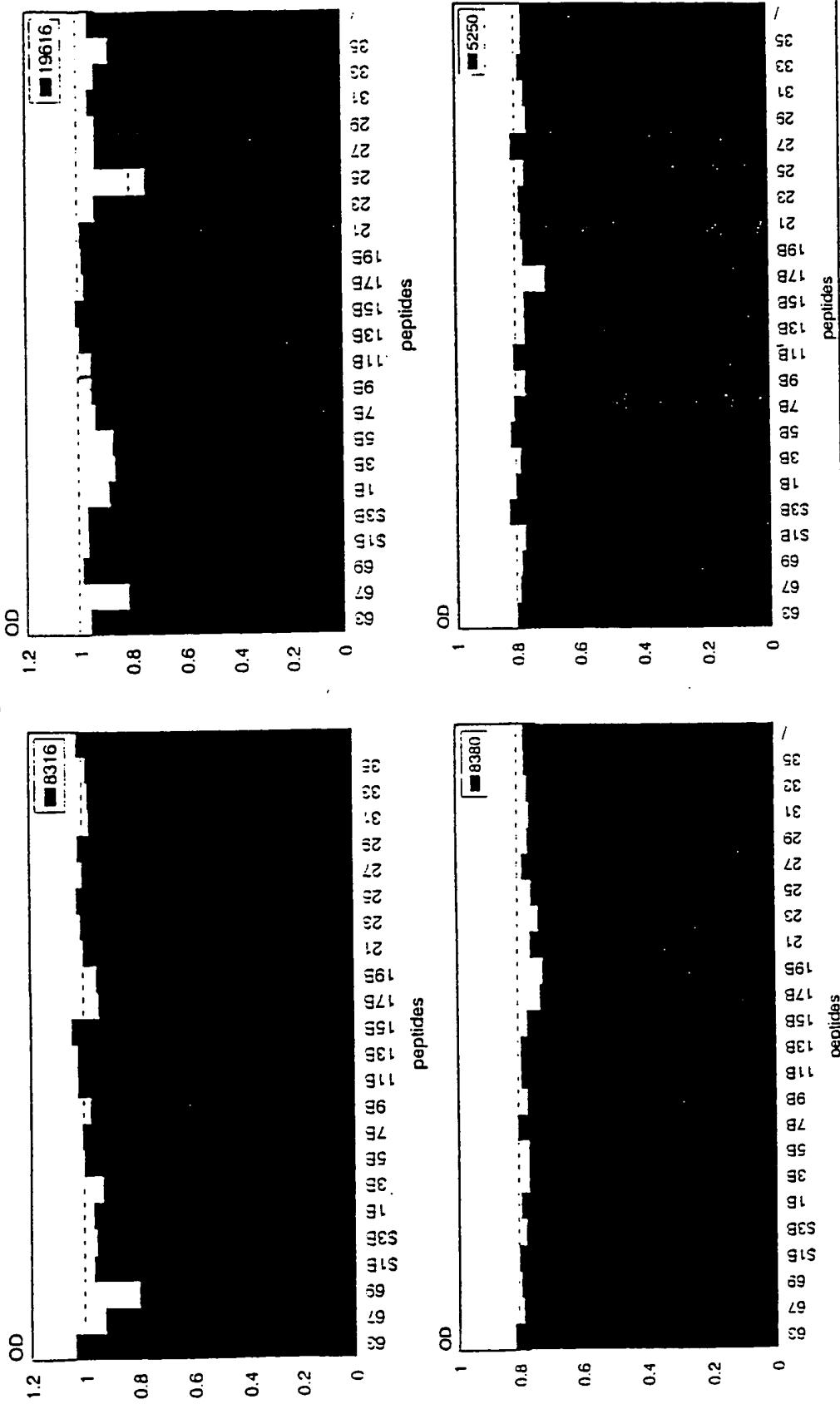


Fig. 20

Fig. 21A

5' GGCATGCAAGCTTAATTAATT3' (SEQ ID NO 1)

3'ACGTCCGTACGTTCGAATTAATTAATCGA5' (SEQ ID NO 94)

5'CCGGGGAGGCCTGCACGTGATCGAGGGCAGACACCATACCAACCATCACTAATAGT

TAATTAACTGCA 3' (SEQ ID NO 2)

3'CCTCCGGACGTGCACTAGCTCCCGTCTGTGGTAGTGGTGGTAGTGATTATCAATTAATTG

5' (SEQ ID NO 95)

SEQ ID NO 3 (HCC19A)

ATGCCCGGTTGCTCTTCTCTATCTTCCCTTGGCTTACTGTCCTGTCTGACCATTCCA
GCTTCCGCTTATGAGGTGCGCAACGTGTCGGGATGTACCATGTCACGAACGACTGCT
CCAACCTCAAGCATTGTGTATGAGGCAGCGGACATGATCATGCACACCCCCGGGTGCGT
GCCCTGCGTTGGGAGAACAAACTCTTCCCGCTGCTGGTAGCGCTACCCCCACGCTC
GCAGCTAGGAACGCCAGCGTCCCCACCACGACAATACGACGCCACGTCGATTGCTCG
TTGGGGCGGCTGCTCTGTTCCGCTATGTACGTGGGGATCTCTGCGGATCTGTCTTC
CTCGTCTCCAGCTGTTACCATCTGCCTCGCCGGCATGAGACGGTGAGGACTGCA
ATTGCTCAATCTATCCCGGCCACATAACAGGTACCGTATGGCTTGGGATATGATGAT
GAACTGGTCGCCTACAACGGCCCTGGTGGTATCGCAGCTGCTCCGGATCCCACAAGCT
GTCGTGGACATGGTGGGGGGGCCATTGGGGAGTCCTGGCGGGCCTGCCTACTATT
CCATGGTGGGGAACTGGGCTAAGGTTTGATTGTGATGCTACTCTTGCTCTAATAG

SEQ ID NO 5 (HCC10A)

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GGTTCTGGAGGACGGCGTGAACATATGCAACAGGGATTGCCCCTGGTCTCTTCTCT
ATCTTCCCTTGCTTGTCTGTGACCGTCCAGCTCCGCTTATGAAGTGCG
CAACGTGTCGGGATGTACCATGTCACGAACGACTGCTCCAACCTCAAGCATTGTAT
GAGGCAGCGGACATGATCATGCACACCCCCGGGTGCGTGCCTGCGTTGGAGAAC
AACTCTTCCCGCTGGTAGCGCTACCCCCACGCTCGCAGCTAGGAACGCCAGCG
TCCCCACGACAATACGACGCCACGTCGATTGCTCGTTGGGGCGCTGCTTCTG

Fig. 21B

TTCCGCTATGTACGTGGGGACCTCTGCGGATCTGCTTCCCTCGTCTCCCAGCTGTTCA
CCATCTCGCTCGCCGGCATGAGACGGTGCAGGACTGCAATTGCTCAATCTATCCCGG
CCACATAACGGGTACCGTATGGCTTGGATATGATGATGAACGGTCGCCTACAAACG
GCCCTGGTGGTATCGCAGCTGCTCCGGATCCCACAAGCTGTCGTGGACATGGTGGCGG
GGGCCATTGGGGAGTCCTGGCGGGTCTCGCCTACTATTCCATGGTGGGGAACTGGGC
TAAGGTTTGATTGTGATGCTACTCTTGCTCCCTAATAG

SEQ ID NO 7 (HCCI11A)

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TTCCGCTCGTCGGCGCCCCCTAGGGGGTGTGCCAGAGCCCTGGCGATGGCGTCCG
GGTTCTGGAAGACGGCGTGAACATATGCAACAGGAAATTGCCTGGTGCTCTTCTCTA
TCTTCCTCTTGGCTTACTGTCCGTCTGACCATTCCAGCTTCCGCTTATGAGGTGCGC
AACGTGTCCGGGATGTACCATGTCACGAACGACTGCTCCAACCTAACGATTGTATG
AGGCAGCGGACATGATCATGCACACCCCCGGTGCCTGCCCTGCCTGGGAGAAC
ACTCTTCCCGCTGGTAGCGCTCACCCCCACGCTCGCAGCTAGGAACGCCAGCGT
CCCCACTACGACAATACGACGCCACGTCGATTGCTCGTTGGGCGGCTGCTTCTGTT
CCGCTATGTACGTGGGGATCTCTGCGGATCTGTCTTCCCTCGTCTCCAGCTGTTACCC
ATCTCGCCTCGCCGGCATGAGACGGTGCAGGACTGCAATTGCTCAATCTATCCCAGGCC
ACATAAACAGGTACCGTATGGCTTGGGATATGATGACTGGTAATAG

SEQ ID NO 9 (HCCI12A)

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GCTTCCGCTTATGAAGTGCGAACGTGTCCGGGGTGTACCATGTCACGAACGACTGCT
CCAACTCAAGCATAGTGTATGAGGCAGCGGACATGATCATGCACACCCCCGGGTGCGT
GCCCTGCGTTGGGAGGGCAACTCCTCCGTTGCTGGGTGGCGCTCACTCCCACGCTC
GCGGCCAGGAACGCCAGCGTCCCCACAACGACAATACGACGCCACGTCGATTGCTC
GTTGGGGCTGCTGTTCTGTTCCGCTATGTACGTGGGGATCTCTGCGGATCTGTTT
CCTTGTTCAGCTGTCACCTCTCACCTCGCCGGCATCAAACAGTACAGGACTGCA
ACTGCTCAATCTATCCCGGCCATGTATCAGGTACCGCATGGCTGGATATGATGAT
GAACTGGTCCTAATAG

SEQ ID NO 11 (HCCI13A)

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GCTTCCGCTTATGAAGTGCGAACGTGTCCGGGTGTACCATGTCACGAACGACTGCT
CCAACATCAAGCATAGTGTATGAGGGAGCGGACATGATCATGACACACCCCCGGGTGCGT

Fig. 21C

GCCCTGCGTTGGGAGGGCAACTCCTCCCGTTGCTGGGTGGCGCTCACTCCCACGCTC
GCGGCCAGGAACGCCAGCGTCCCCACAACGACAATACGACGCCACGTCGATTTGCTC
GTTGGGGCTGCTGCTTCTGTTCCGCTATGTACGTGGGGATCTCTGCGGATCTGTTT
CCTTGTTCAGCTGTTCACCTCTCACCTCGCCGGCATCAAACAGTACAGGACTGCA
ACTGCTCAATCTATCCCAGGCATGTATCAGGTACCCGATGGCTTGGGATATGATGAT
GAACTGGTAATAG

SEQ ID NO 13 (HCC17A)

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TTCCGCTCGTCGGCGCCCCCTAGGGGGCGCTGCCAGGGCCCTGGCGCATGGCGTCCG
GGTTCTGGAAGACGGCGTGAACTATGCAACAGGGATTGCCTGGTTGCTCTTCTCTA
TCTTCCTCTGGCTTACTGTCCTGTCTAACCACCAGCTTCCGCTTACGAGGTGCGC
AACGTGTCGGGATGTACCATGTCACGACGACTGCTCCAACTCAAGCATTGTATG
AGGCAGCGGACATGATCATGCACACCCCCGGTGCGTGCCCTGCGTTGGGAGAAC
ACTCTCCCGCTGCTGGTAGCGCTACCCCCACGCTCGCGGCTAGGAACGCCAGCAT
CCCCACTACAACAATACGACGCCACGTCGATTGCTCGTTGGGGCGGCTGTTCTGTT
CCGCTATGTACGTGGGGATCTCTGCGGATCTGTCTTCCCTCGTCTCCAGCTGTTCA
ATCTCGCCTCGCCGGATGAGACGGTGCAGGACTGCAATTGCTCAATCTATCCCAGG
ACATAACGGGTACCGTATGGCTGGGATATGATGAACTGGTACTAATAG

SEQ ID NO 15 (HCPr51)

ATGCCCGGTTGCTTTCTCTATCTT

SEQ ID NO 16 (HCPr52)

ATGTTGGGTAAGGTCATCGATACCCT

SEQ ID NO 17 (HCPr53)

CTATTAGGACCAGTTCATCATCATCATATCCCA

SEQ ID NO 18 (HCPr54)

CTATTACCAGAGTTCATCATCATATCCCA

SEQ ID NO 19 (HCPr107)

ATACGACGCCACGTCGATTCCCAGCTGTTCACCATC

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Fig. 21D

SEQ ID NO 20 (HCP108)

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SEQ ID NO 21 (HCCI37)

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GGTTCTGGAGGACGGCGTGAACATATGCAACAGGAATTGCCCAGTTGCTCTTCTCT
ATCTTCTCTTGGCTTGCTGTCTGTGACCGTTCCAGCTTCCGCTTATGAAGTGC
CAACGTGTCGGGATGTACCATGTCACGAACGACTGCTCCAACCTCAAGCATTGTAT
GAGGCAGCGGACATGATCATGCACACCCCCGGTGCCTGCCCTGCCTCGGGAGAAC
AACTCTTCCCCTGCTGGTAGCGCTCACCCCCACGCTCGCAGCTAGGAACGCCAGCG
TCCCCACCACGACAATACGACGCCACGTCGATTCCCAGCTGTTACCATCTGCCCTCG
CCGGCATGAGACGGTGCAGGACTGCAATTGCTCAATCTATCCCGGCCACATAACGGGT
CACCGTATGGCTGGATATGATGATGAACCTGGTCGCCTACAACGGCCCTGGTGGTAT
CGCAGCTGCTCCGGATCCCACAAGCTGTCGTGGACATGGTGGCGGGGGCCATTGGGG
AGTCCTGGCGGGTCTGCCCTACTATTCCATGGTGGGAACCTGGCTAAGGTTTGATTG
TGATGCTACTCTTGCTCCCTAATAG

SEQ ID NO 23 (HCCI38)

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ATCTTCTCTTGGCTTGCTGTCTGTGACCGTTCCAGCTTCCGCTTATGAAGTGC
CAACGTGTCGGGATGTACCATGTCACGAACGACTGCTCCAACCTCAAGCATTGTAT
GAGGCAGCGGACATGATCATGCACACCCCCGGTGCCTGCCCTGCCTCGGGAGAAC
AACTCTTCCCCTGCTGGTAGCGCTCACCCCCACGCTCGCAGCTAGGAACGCCAGCG
TCCCCACCACGACAATACGACGCCACGTCGATTCCCAGCTGTTACCATCTGCCCTCG
CCGGCATGAGACGGTGCAGGACTGCAATTGCTCAATCTATCCCGGCCACATAACGGGT
CACCGTATGGCTGGATATGATGATGAACCTGGTAA
TAG

SEQ ID NO 25 (HCCI39)

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TTCCGCTCGTCGGCGCCCCCTAGGGGGCGCTGCCAGGGCCCTGGCGCATGGCGTCCG
GGTTCTGGAGGACGGCGTGAACATATGCAACAGGAATTGCCCAGTTGCTCTTCTCT

Fig. 21E

ATCTTCCTCTGGCTTGCTGTCCTGTCTGACCGTTCCAGCTTCCGCTTATGAAGTGCG
CAACGTGTCCGGGATGTACCATGTCACGAACGACTGCTCCAACCTAAGCATTGTGTAT
GAGGCAGCGGACATGATCATGCACACCCCCGGTGCCTGCCCTGCCTCGGGAGAAC
AACTCTTCCCCTGCTGGTAGCGCTCACCCCCACGCTCGCAGCTAGGAACGCCAGCG
TCCCCACACGACAATACGACGCCACGTCGATTCCAGCTGTTACCATCTGCCCTCG
CCGGCATGAGACGGTGCAGGACTGCAATTGCTCAATCTATCCGGCCACATAACGGGT
CACCGTATGGCTGGGATATGATGATGAACGGTCGCCTACAACGGCCCTGGTGGTAT
CGCAGCTGCTCCGGATCCTCTAATAG

SEQ ID NO 27 (HCCI40)

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TTCCGCTCGTCGGCGCCCCCTAGGGGGCGCTGCCAGGGCCCTGGCGATGGCGTCCG
GGTTCTGGAGGACGGCGTGAACATGCAACAGGGATTGCCCGTTGCTCTTCTCT
ATCTTCCTCTGGCTTGCTGTCCTGTCTGACCGTTCCAGCTTCCGCTTATGAAGTGCG
CAACGTGTCCGGGATGTACCATGTCACGAACGACTGCTCCAACCTAAGCATTGTGTAT
GAGGCAGCGGACATGATCATGCACACCCCCGGTGCCTGCCCTGCCTCGGGAGAAC
AACTCTTCCCCTGCTGGTAGCGCTCACCCCCACGCTCGCAGCTAGGAACGCCAGCG
TCCCCACACGACAATACGACGCCACGTCGATTCCAGCTGTTACCATCTGCCCTCG
CCGGCATGAGACGGTGCAGGACTGCAATTGCTCAATCTATCCGGCCACATAACGGGT
CACCGTATGGCTGGGATATGATGATGAACGGTCGCCTACAACGGCCCTGGTGGTAT
CGCAGCTGCTCCGGATCGTATCGAGGGCAGACACCATCACCACCATCACTAATAG

SEQ ID NO 29 (HCCI62)

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TCCTTCTCGCTCTGTTCTTGTCTTAATTCCAGCAGCTAGTCTAGAGTGGCGGAAT
ACGTCTGGCCTCTATGTCCTTACCAACGACTGTTCAATAGCAGTATTGTGTACGAGGC
CGATGACGTTATTCTGCACACACCCGGCTGCATACCTTGTGTCCAGGACGGCAATACA
TCCACGTGCTGGACCCAGTGCACACCTACAGTGGCAGTCAAGTACGTCGGAGCAACCA
CCGCTTCGATACGCACTGTGGACCTATTAGTGGCGCGCCACGATGTGCTCTGC
GCTCTACGTGGGTGACATGTGTGGGCTGCTTCCCTGCTGGGACAAGCCTCACGTTCA
GACCTCGTCGCCATCAAACGGTCCAGACCTGTAACGTCTCGCTGTACCCAGGCCATCT
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Fig. 21F

SEQ ID NO 31 (HCCI63)

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TTATTCTTGTCTCTCGTGTCTGACCGTTCCGGCTCTGCAGTCCCTACCGAAATG
CCTCTGGATTATCATGTTACCAATGATTGCCAAACTCTTCCATAGTCTATGAGGCA
GATAACCTGATCCTACACGCACCTGGTTGCGTGCCTGTGTATGACAGGTAATGTGA
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GGCTCCTCTCGGAGAGCCGTTGACTACCTAGCAGGGAGGGCTGCCCTGCTCCGCG
TTATACGTAGGAGACCGGTGTGGGCACTATTCTGGTAGGCCAAATGTTCACCTATA
GGCCTGCCAGCACGCTACGGTGCAGAACTGCAACTGTTCCATTACAGTGGCCATGT
TACCGGCCACCGGATGGCATGGGATATGATGATGAACTGGTAATAG

SEQ ID NO 33 (HCPr109)

TGGGATATGATGATGAACTGGTC

SEQ ID NO 34 (HCPr72)

CTATTATGGTGGTAAKGCCARCARGAGCAGGAG

SEQ ID NO 35 (HCCL22A)

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GCCTCGCCTACTATTCCATGGTGGGAACCTGGCTAAGGTTTGGTTGATGCTACTC
TTGCCGGCGTCGACGGGATAACCGCGTGTCAAGGAGGGCAGCAGCCTCCGATACCA
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CGCTTGGCCAGCTGCGCTCATCGACAAGTTGCTCAGGGTGGGTCCCTCACTT
ACACTGAGCCTAACAGCTGGACCAAGAGGCCCTACTGCTGGCACTACGCGCCTCGACC
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CTGTTGTGGTGGGACGACCGATCGGTTGGTGTCCCCACGTATAACTGGGGGGGAA
CGACTCGGATGTGCTGATTCTAACAAACACGCGGCCGCCGAGGCAACTGGTTCGGC
TGTACATGGATGAATGGCACTGGTCAACAGACGTGTGGGGCCCCCGTGCAACA
TCGGGGGGCCGGCAACAAACACCTTGACCTGCCCACTGACTGTTTCGGAAGCACCC
CGAGGCCACCTACGCCAGATGCGTTCTGGCCCTGGCTGACACCTAGGTGTATGGTT

Fig. 21G

CATTACCCATATAGGCTCTGGCACTACCCCTGCACTGTCAACTTCACCATCTTCAAGGT
TAGGATGTACGTGGGGGGCGTGGAGCACAGGTCGAAGCCGCATGCAATTGGACTCG
AGGAGAGCGTTGTGACTTGGAGGGACAGGGATAGATCAGAGCTTAGCCCGCTGCTGCTG
TCTACAAACAGAGTGGCAGATACTGCCCTGTTCTTCAACCACCCCTGCCGGCCCTATCCA
CCGGCCTGATCCACCTCCATCAGAACATCGTGGACGTGCAATACCTGTACGGTAGG
GTCGGCGGTTGTCTCCCTTGTCAATCAAATGGGAGTATGTCTGTTGCTCTTCTTCTC
GGCAGACGCGCGCATCTGCCCTGCTTATGGATGATGCTGCTGATAGCTCAAGCTGAG
GCCGCCTTAGAGAACCTGGTGGTCTCAATGCCGGCCGTGGCCGGGGCGCATGGC
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CACACAGAGCTTATGCCCTAGTAA

SEQ ID NO 37 (HCCI41)

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CGACTCGGATGTGCTGATTCTAACAAACACGCCGCCCGAGGCAACTGGTTGCG
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TCGGGGGGGCCGGCAACAAACACCTTGACCTGCCCACTGACTGTTTGGAAAGCACCC
CGAGGCCACCTACGCCAGATGCCAGTGGCTGGGGCCCTGGCTGACACCTAGGTATGGTT
CATTACCCATATAGGCTCTGGCACTACCCCTGCACTGTCAACTTCACCATCTTCAAGGT
TAGGATGTACGTGGGGGGCGTGGAGCACAGGTCGAAGCCGCATGCAATTGGACTCG
AGGAGAGCGTTGTGACTTGGAGGGACAGGGATAGATCAGAGCTTAGCCCGCTGCTGCTG
TCTACAAACAGAGTGGCAGAGTGGCAGAGCTTAATTAAATTAG

SEQ ID NO 39 (HCCI42)

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CCTCGCCTACTATTCCATGGTGGGAACCTGGCTAAGGTTTGGTTGTATGCTACTCT

2020-11-04 14:56:50

Fig. 21H

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GGGGCCTTGTGTCCCTCTTAGCCCCGGGTCGGCTCAGAAAATCCAGCTCGTAAACAC
CAACGGCAGTTGGCACATCAACAGGACTGCCCTGAACGACTCCCTCCAAAC
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CATTACCCATATAGGCTCTGGCACTACCCCTGCACTGTCAACTTCAACCATCTCAAGGT
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SEQ ID NO 41 (HCCI43)

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ATCAACAGGACTGCCCTGAACTGCAACGACTCCCTCAAACAGGGTTTTGCCGAC
TATTCTACAAACACAAATTCAACTCGTCTGGATGCCAGAGCGCTGGCCAGCTGTG
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TCGGACCAGAGGCCCTACTGCTGGCACTACGCCCTCGACCGTGTGGTATTGTACCCG
CGTCTCAGGTGTGGTCCAGTGTATTGCTTACCCCGAGCCCTGGTGGTGGGAC
GACCGATGGTTGGTGTCCCCACGTATAACTGGGGGGCGAACGACTCGGATGTGCTG
ATTCTCAACAAACACGCCCGCCGAGGCAACTGGTTCGGCTGTACATGGATGAATG
GCACTGGGTTACCAAGACGTGTGGGGGCCCGTGCACATCGGGGGGCCGGCA
ACAACACCTTGACCTGCCCACTGACTGTTTGGGAAGCACCCCGAGGCCACCTACGC
CAGATGCGGTTCTGGGCCCTGGCTGACACCTAGGTGTGGTATTACCCATATAGG
CTCTGGCACTACCCCTGCACTGTCAACTTCACCATCTCAAGGTTAGGATGTACGTGG
GGCGTGGAGCACAGGTTGAAGCCGATGCAATTGGACTCGAGGAGAGCGTTGTGA
CTTGGAGGACAGGGATAGATCAGAGCTTAGCCGCTGCTGTACACAGAGTGG
CAGAGCTTAATTAATTAG

Fig. 21I

SEQ ID NO 43 (HCCI44)

ATGGTGGGAACTGGCTAAGGTTTGGTTGATGCTACTCTTGCCGGCGTCGACG
GGCATAACCGCGTGTCAAGGAGGGCAGCAGCCTCCGATACCAGGGCCTTGTGTCCT
CTTAGCCCCGGGTCGGCTCAGAAAATCCAGCTCGTAAACACCAACGGCAGTGGCAC
ATCAACAGGACTGCCCTGAACTGCAACGACTCCCTCCAAACAGGGTCTTGCCGCAC
TATTCTACAAACACAAATTCAACTCGTCTGGATGCCAGAGCGCTGGCCAGCTGTGCG
CTCCATCGACAAGTCGCTCAGGGTGGGCTCCCTCACTTACACTGAGCCTAACAGC
TCGGACCAGAGGCCCTACTGCTGGCACTACGCGCCTCGACCGTGTGGTATTGTACCCG
CGTCTCAGGTGTGCGGTCCAGTGTATTGCTTCACCCGAGCCCTGTTGTGGTGGGAC
GACCGATCGGTTGGTGTCCCCACGTATAACTGGGGGCGAACGACTCGGATGTGCTG
ATPCTCAACAAACACGCGGCCGCCGAGGCAACTGGTCGGCTGTACATGGATGAATG
GCACTGGGTTACCAAGACGTGTGGGGCCCCCGTCAACATGGGGGGCCGGCA
ACAACACCTTGACCTGCCCACTGACTGTTCGGAAGCACCCGAGGCCACCTACGC
CAGATGCGGTTCTGGCCCTGGCTGACACCTAGGTGTGGTATTACCCATATAGG
CTCTGGCACTACCCCTGCACTGTCAACTTACCATCTTCAAGGTTAGGATGTACGTGGG
GGCGTGGAGCACAGGTCGAAGCCGATGCAATTGGACTCGAGGAGAGCCTGTGA
CTTGGAGGACAGGGATAGATCAGAGCTTAGCCGCTGCTGTCTACAACAGGTGAT
CGAGGGCAGACACCATACCACCATCACTAATAG

SEQ ID NO 45 (HCCL64)

ATGGTGGCGGGGGCCCATTGGGGAGTCCTGGCGGGCTCGCCTACTATTCCATGGTGG
GGAACTGGCTAAGGTTTGGTTGATGCTACTCTTGCCGGCGTCGACGGGCATAC
CCGCGTGTCAAGGAGGGCAGCAGCCTCCGATACCAGGGCCTTGTGTCCTCTTAGC
CCCGGGTGGCTCAGAAAATCCAGCTCGTAAACACCAACGGCAGTGGCACATCAAC
AGGACTGCCCTGAACTGCAACGACTCCCTCCAAACAGGGTCTTGCCGCACTATTCT
ACAAACACAAATTCAACTCGTCTGGATGCCAGAGCGCTGGCCAGCTGTCGCTCCAT
CGACAAGTCGCTCAGGGTGGGCTCCCTCACTTACACTGAGCCTAACAGCTCGGAC
CAGAGGCCCTACTGCTGGCACTACGCGCCTCGACCGTGTGGTATTGTACCCCGTCTC
AGGTGTGGTCCAGTGTATTGCTTCACCCGAGCCCTGTTGTGGTGGGACGACCGA
TCGGTTGGTGTCCCCACGTATAACTGGGGGCGAACGACTCGGATGTGCTGATTCTC
ACAAACACGCGGCCGCCGAGGCAACTGGTCGGCTGTACATGGATGAATGGCACT
GGGTTACCAAGACGTGTGGGGCCCCCGTCAACATGGGGGGCCGGCAACAAAC
ACCTTGACCTGCCCACTGACTGTTCGGAAGCACCCGAGGCCACCTACGCCAGAT
GCGGTTCTGGCCCTGGCTGACACCTAGGTGTATGGTATTACCCATATAGGCTCTGG
CACTACCCCTGCACTGTCAACTTACCATCTTCAAGGTTAGGATGTACGTGGGGGGCG

Fig. 21J

TGGAGCACAGGTTGAAGCCGCATGCAATTGGACTCGAGGAGAGCGTTGTACTTGGAG
GGACAGGGATAGATCAGAGCTTAGCCCGCTGCTGCTGTACAACACAGAGTGGCAGATA
CTGCCCTGTTCTTCACCACCCCTGCCGGCCCTATCCACCGGCCTGATCCACCTCCATCA
GAACATCGTGGACGTGCAATACCTGTACGGTAGGGTCGGCGGTTGTCTCCCTTGTCT
ATCAAATGGGAGTATGTCCTGTTGCTCTCCTCTGGCAGACGCGCGCATCTGCGC
CTGCTTATGGATGATGCTGCTGATAGCTAACGCTGAGGCCGCTTAGAGAACCTGGTG
GTCCTCAATGCCGGCCGTGGCCGGGCGCATGGCACTCTTCCTCCTGTGTTCTT
CTGTGCTGCCTGGTACATCAAGGGCAGGCTGGTCCCTGGTGCAGCATACGCCCTAT
GGCGTGTGGCCGCTGCTCCTGCTTGCTGGCCTTACCAACCACGAGCTTATGCGCTAGTAA

SEQ ID NO 47 (HCCI65)

AATTGGGTAAGGTATCGATACCCCTACATGCCGCTTCGCCGACCTCGTGGGTACA
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GGTTCTGGAGGACGGCGTGAACATGCAACAGGAATTGCCCCGGTTGCTCTTCTCT
ATCTTCCTCTGGCTTGCTGTCTGACCGTCCAGCTCCGCTTATGAAGTGCG
AACGTGTCCGGGATGTACCATGTCACGAACGACTGCTCCAACCTAACGATTGTAT
GAGGCAGCGGACATGATCATGACACACCCCGGGTGCCTGCCCTGCCTGGGAGAAC
AACTCTCCCGCTGCTGGTAGCGCTACCCCCACGCTCGCAGCTAGGAACGCCAGCG
TCCCCACACGACAATACGACGCCACGTCGATTGCTCGTTGGGCGGCTGTTCTG
TTCCGCTATGTACGTGGGGACCTCTGCCGATCTGCTTCCCTGCTCTCCAGCTGTTCA
CCATCTGCCCTGCCGGCATGAGACGGTGCAAGACTGCTCAATCTATCCCG
CCACATAACGGGTACCGTATGGCTGGGATATGATGATGAACTGGTCGCCTACAACG
GCCCTGGTGGTATCGCAGCTGCCGGATCCCACAAGCTGCGTGGACATGGTGGCG
GGGCCATTGGGGAGTCTGGGGCCCTGCCCTACTATTCCATGGTGGGAACTGGG
TAAGGTTTGGTTGTATGCTACTCTTGCCGGCGTCGACGGGCATAACCGCGTGTCA
GAGGGCAGCAGCCTCCGATACCAGGGGCCTTGTGTCCTCTTAGCCCCGGTCGGC
TCAGAAAATCCAGCTCGTAAACACCAACGGCAGTTGGCACATCAACAGGACTGCC
GAACTGCAACGACTCCCTCAAACAGGGTTCTTGCCGCACTATTCTACAAACACAAA
TTCAACTCGTCTGGATGCCAGAGCGCTGGCCAGCTGCGCTCCATCGACAAGTTG
CTCAGGGGTGGGTCCCCCTACCTACACTGAGCCTAACAGACTCGGACCGAGGGC
CTGCTGGCACTACGCCCTCGACCGTGTGGTATTGTACCCCGTCTCAGGTGTGCG
CCAGTGTATTGCTTACCCCGAGCCCTGTTGTGGTGGGACGACCGATGGTTGGT
CCCCACGTATAACTGGGGGGCGAACGACTCGGATGTGCTGATTCTCAACAAACACGCG
CCGCCCGAGGCAACTGGTTGGCTGTACATGGATGAATGGCACTGGTTACCAAGA
CGTGTGGGGGCCCCCGTGAACATGGGGGGCGCAACAAACACCTTGACCTGCG

Fig. 21K

CCACTGACTGTTTCGGAAGCACCCGAGGCCACCTACGCCAGATCGGTTCTGGGCC
CTGGCTGACACCTAGGTGTATGGTTATTACCCATATAGGCTCTGGCACTACCCCTGCA
CTGTCAACTTACCCATCTCAAGGTTAGGATGTACGTGGGGGCGTGGAGCACAGGTT
CGAAGCCGCATGCAATTGGACTCGAGGAGAGCGTTGTGACTTGAGGACAGGGATAG
ATCAGAGCTTAGCCCGCTGCTGTCTACAACAGAGTGGCAGATACTGCCCTGTTCC
TTCACCACCCCTGCCGGCCCTATCCACC GG C CTGATCCACCTCCATCAGAACATCGTGG
ACGTGCAATACCTGTACGGTGTAGGGTCGGCGGTTGTCTCCCTGTCAATGGGA
GTATGTCCTGTTGCTCTCCTCTGGCAGACGCGCGCATCTGCGCCTGCTTATGGA
TGATGCTGCTGATAGCTAAGCTGAGGCCGCTTAGAGAACCTGGTGGTCTCTGTGCTGCC
GGCGGCCGTGGCCGGGCGCATGGCACTCTTCCTCCTGTGTTCTCTGTGCTGCC
GGTACATCAAGGGCAGGCTGGTCCCTGGTGC GG C ATACGCCCTCATGGCGTGTGGCC
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SEQ ID NO 49 (HCCI66)

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CAGGACGTCAAGTTCCCGGGCGGTGGTCAGATCGTGGTGGAGTTACCTGTTGCCGC
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CTCGTGGGAGGCAGAACCTATCCCCAAGGCTGCCGACCCGAGGGTAGGGCCTGGG
CTCAGCCCGGGTACCCCTGGCCCTCTATGGCAATGAGGGCATGGGTGGCAGGATG
GCTCCTGTCACCCCGCGGCTCGGCCCTAGTTGGGCCCTACAGACCCCCGGCGTAGG
TCGCGTAATTGGTAAGGTATCGATACCCCTACATGCGGCTTCCGACCTCGTGG
GGTACATTCCGCTCGTGGCGCCCCCTAGGGGGCGCTGCCAGGGCCCTGGCGCATGG
CGTCCGGTTCTGGAGGACGGCGTGAACATGCAACAGGAATTGCCCGGTTGCTCT
TTCTCTATCTCCTTGGCTTGCTGTCTGACCGTTCCAGCTCCGCTTATGAA
GTGCGCAACGTGTCCGGATGTACCATGTCACGAACGACTGCTCCAACCTAACGATTG
TGTATGAGGCAGCGGACATGATCATGCACACCCCCGGTGCCTGCCTGCGTTGGGA
GAACAACTCTCCGCTGCTGGTAGCGCTACCCCCACGCTCGCAGCTAGGAACGCC
AGCGTCCCCACGACAATACGACGCCACGTCGATTGCTCGTGGGGCGGCTGCTT
TCTGTTCCGCTATGTACGTGGGGACCTCTGCCGATCTGCTTCCCTCGTCTCCAGCTG
TTCACCATCTGCCCTGCCGGCATGAGACGGTGCAGGACTGCAATTGCTCAATCTATC
CCGGCCACATAACGGGTACCGTATGGCTGGATATGATGACTGGTCGCCTAC
AACGGCCCTGGTGGTATCGCAGCTGCCGATCCCACAAGCTGCGTGGACATGGTG
GCGGGGGCCATTGGGGAGTCCTGGCGGGCTGCCCTACTATTCCATGGTGGGGAACT
GGGCTAAGGTTTGGTTGTGATGCTACTCTTGCCGGCGTCGACGGCATAACCGCGT
GTCAGGAGGGCAGCAGCCTCCGATACCAGGGCCCTGTGTCCTCTTACCCCCGGG

Fig. 21L

TCGGCTCAGAAAATCCAGCTCGAAACACCAACGGCAGTGGCACATCAACAGGACT
GCCCTGAACTGCAACGACTCCCTCAAACAGGGTTCTTGCCGCACTATTCTACAAAC
ACAAATTCAACTCGTCTGGATGCCAGAGCGCTGGCCAGCTGTCGCTCCATCGACAA
GTTCGCTCAGGGTGGGTCCCCACTTACACTGAGCCTAACAGCTCGGACCAGAGG
CCCTACTGCTGGCACTACGCGCCTCGACCGTGTGGTATTGTACCCGCGTCTCAGGTGT
GCGGTCCAGTGTATTGCTTCACCCCGAGCCCTGTTGTGGTGGGACGACCGATCGGTT
TGGTGTCCCCACGTATAACTGGGGGGCGAACGACTCGGATGTGCTGATTCTCAACAAAC
ACGCAGCGCCGCGAGGCAACTGGTCGGCTGTACATGGATGAATGGCACTGGTTCA
CCAAGACGTGTGGGGGCCCCCGTGCAACATCGGGGGGGCCGGCAACAAACACCTTGA
CCTGCCCACTGACTGTTTCGGAAGCACCCCGAGGCCACCTACGCCAGATCGGTT
TGGGCCCTGGCTGACACCTAGGTGTATGGTTATTACCCATATAGGCTCTGGCACTAC
CCCTGCACTGTCAACTTACCATCTTCAAGGTTAGGATGTACGTGGGGCGTGGAGC
ACAGGTTGAAGCCGATGCAATTGGACTCGAGGAGAGCGTTGTACTTGGAGGACA
GGGATAGATCAGAGCTTAGCCCGCTGCTGTCTACAACAGAGTGGCAGATACTGCC
CTGTTCTTCACCACCCCTGCCGCCCTATCCACCGGCCTGATCCACCTCCATCAGAAC
ATCGTGGACGTGCAATACCTGTACGGTAGGGTCGGCGTTGTCTCCCTTGTATCA
AATGGGAGTATGTCCTGTTGCTCTCCTGCGAGACGCGCGCATCTGCCCTGC
TTATGGATGATGCTGCTGATAGCTCAAGCTGAGGCCGCTTAGAGAACCTGGTGGTCC
TCAATGCCGGCGGCCGTGGCCGGGCGCATGGCACTCTTCCTGCGAGACGCGCGCATACGCCCTATGGCG
GCTGCCCTGGTACATCAAGGGCAGGCTGGCCCTGGTGCAGACGCCCTATGGCG
TGTGGCCGCTGCTCCTGCTTCTGCTGGCCTTACCAACCACGAGCTATGCCTAGTAA

Fig. 22

OD measured at 450 nm
construct

Fraction	volume	dilution	39 Type 1b	40 Type 1b	62 Type 3a	63 Type 5a
START	23 ml	1/20	2.517	1.954	1.426	1.142
FLOW THROUGH	23 ml	1/20	0.087	0.085	0.176	0.120
1	0.4 ml	1/200	0.102	0.051	0.048	0.050
2	-	-	0.396	0.550	0.090	0.067
3	-	-	2.627	2.603	2.481	2.372
4	-	-	3	2.967	3	2.694
5	-	-	3	2.810	2.640	2.154
6	-	-	2.694	2.499	1.359	1.561
7	-	-	2.408	2.481	0.347	1.390
8	-	-	2.176	1.970	1.624	0.865
9	-	-	1.461	1.422	0.887	0.604
10	-	-	1.286	0.926	0.543	0.519
11	-	-	0.981	0.781	0.294	0.294
12	-	-	0.812	0.650	0.249	0.199
13	-	-	0.373	0.432	0.239	0.209
14	-	-	0.653	0.371	0.145	0.184
15	-	-	0.441	0.348	0.151	0.151
16	-	-	0.321	0.374	0.098	0.106
17	-	-	0.525	0.186	0.099	0.108
18	-	-	0.351	0.171	0.083	0.090
19	-	-	0.192	0.164	0.084	0.087

00023044-00000

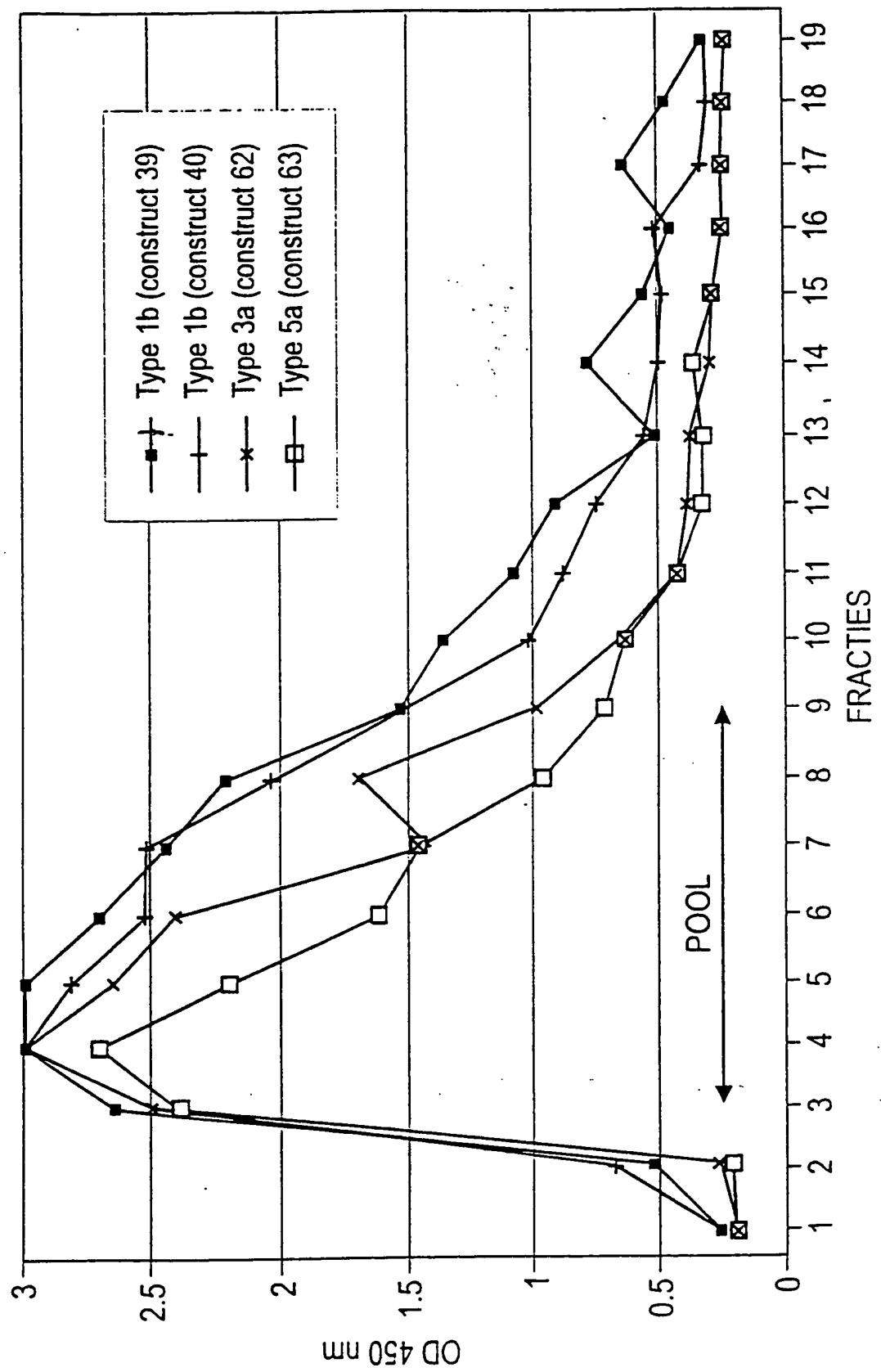


Fig. 23

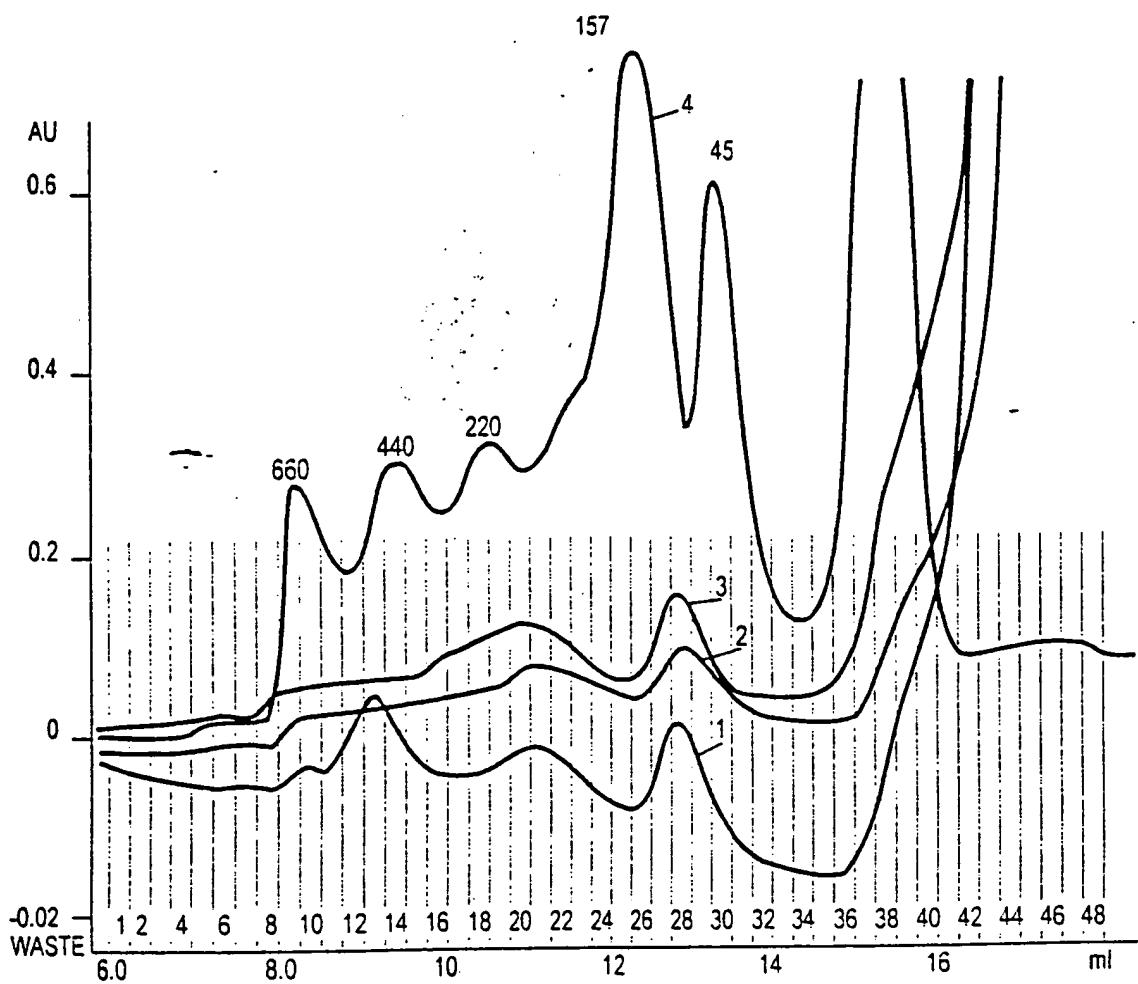


Fig. 25



Fig. 26

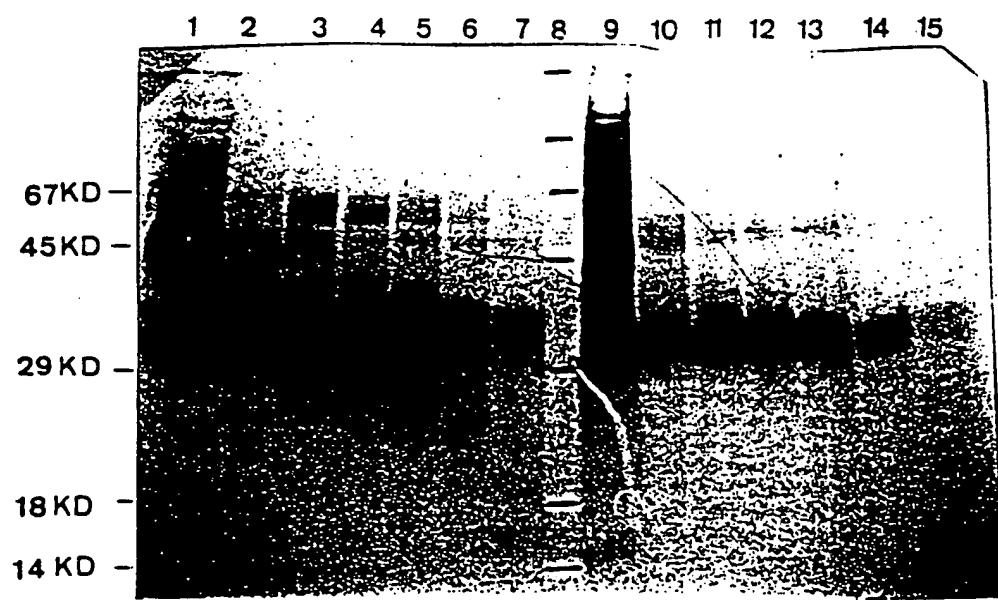


Fig. 27

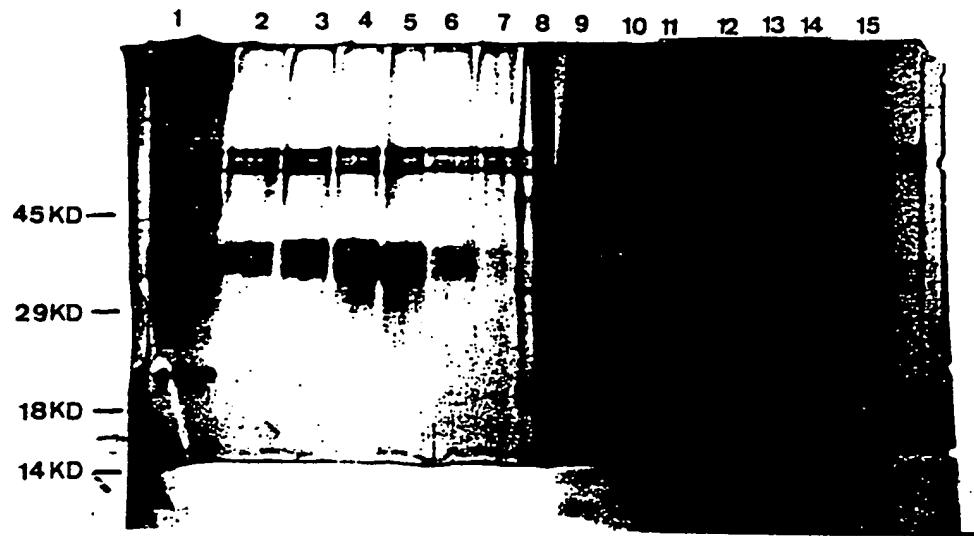
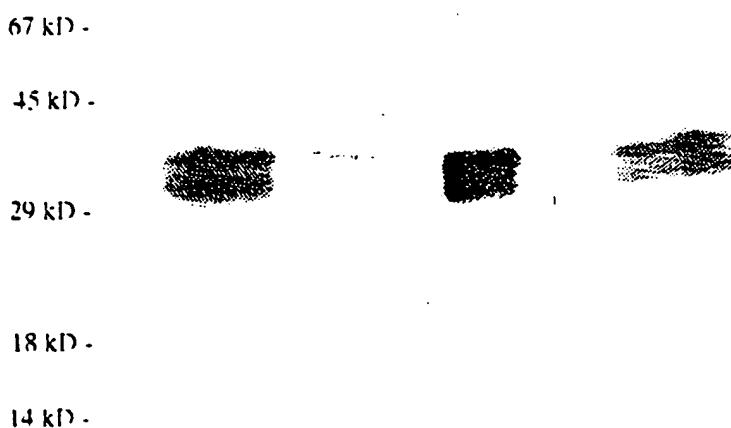


Fig.28

M 1 2 3 4 5 6

Fig.29



- Lane 1: Crude Lysate
- Lane 2: Flow through Lentil Chromatography
- Lane 3: Wash with EMPIGEN Lentil Chromatography
- Lane 4: Eluate Lentil Chromatography
- Lane 5: Flow through during concentration lentil eluate
- Lane 6: Pool of Elastin Size Exclusion Chromatography

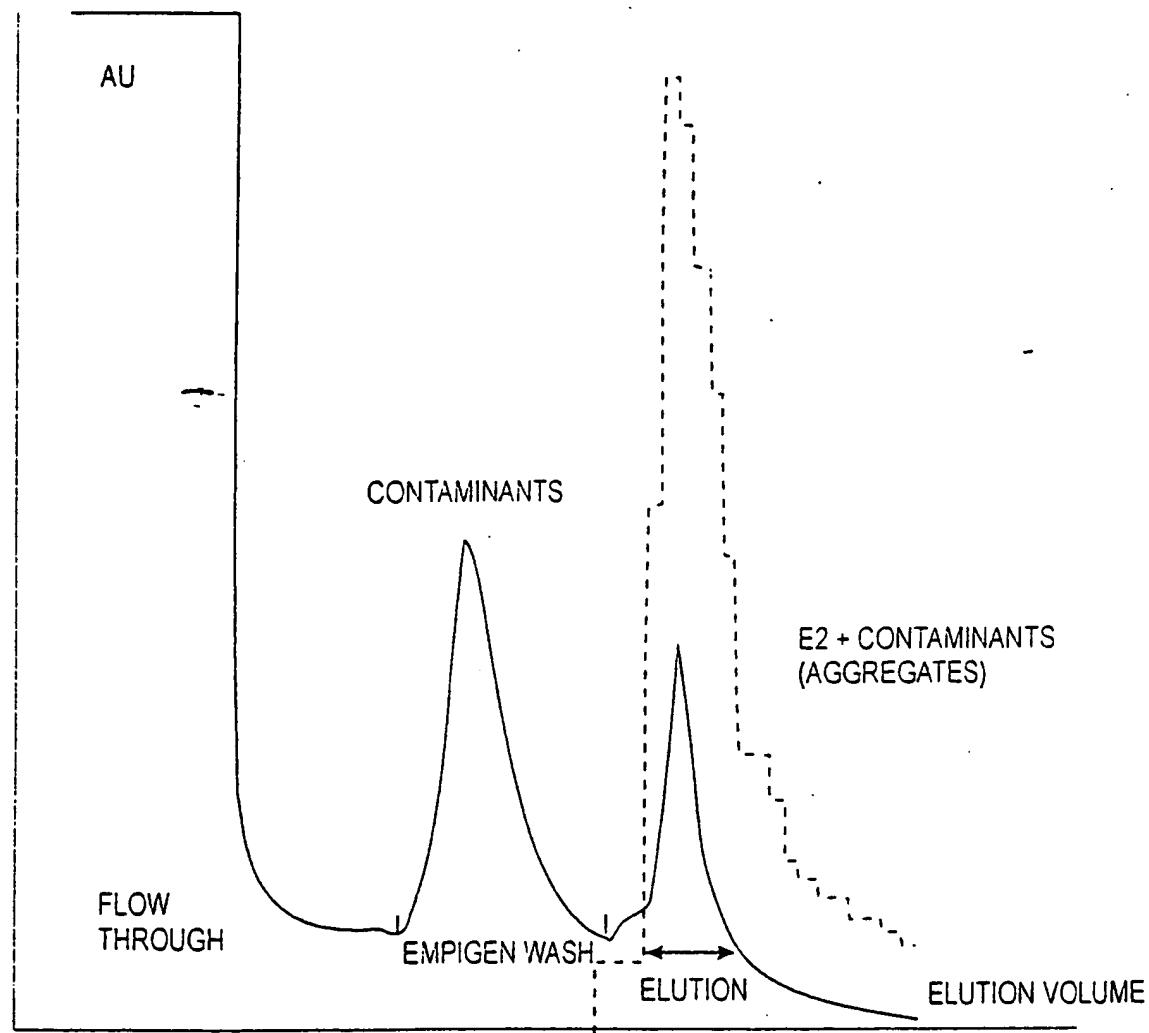
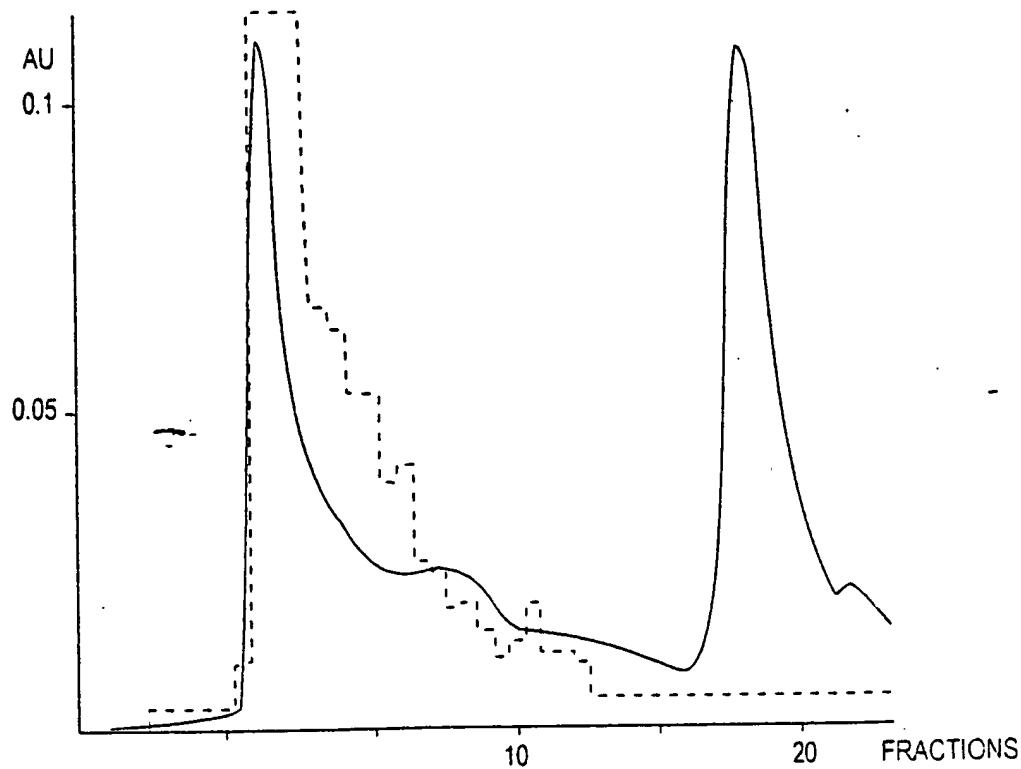


Fig. 30

NON - REDUCED

Fig. 31A

E2 + CONTAMINANTS (AGGREGATES)



REDUCED

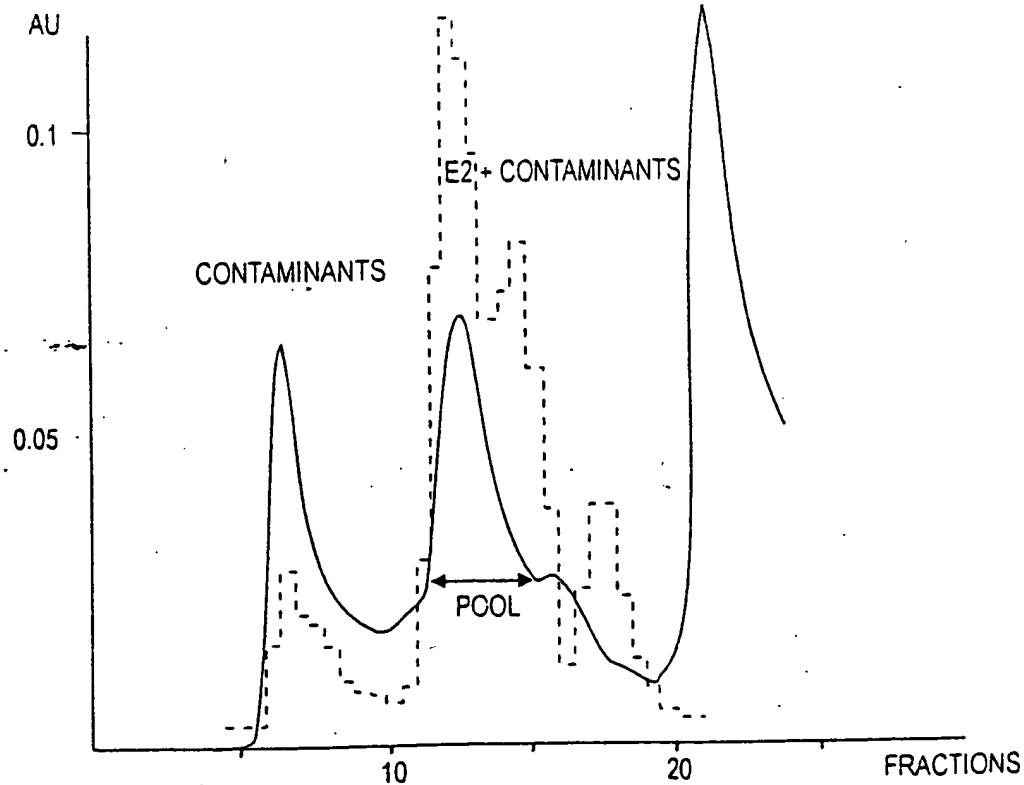


Fig. 31B

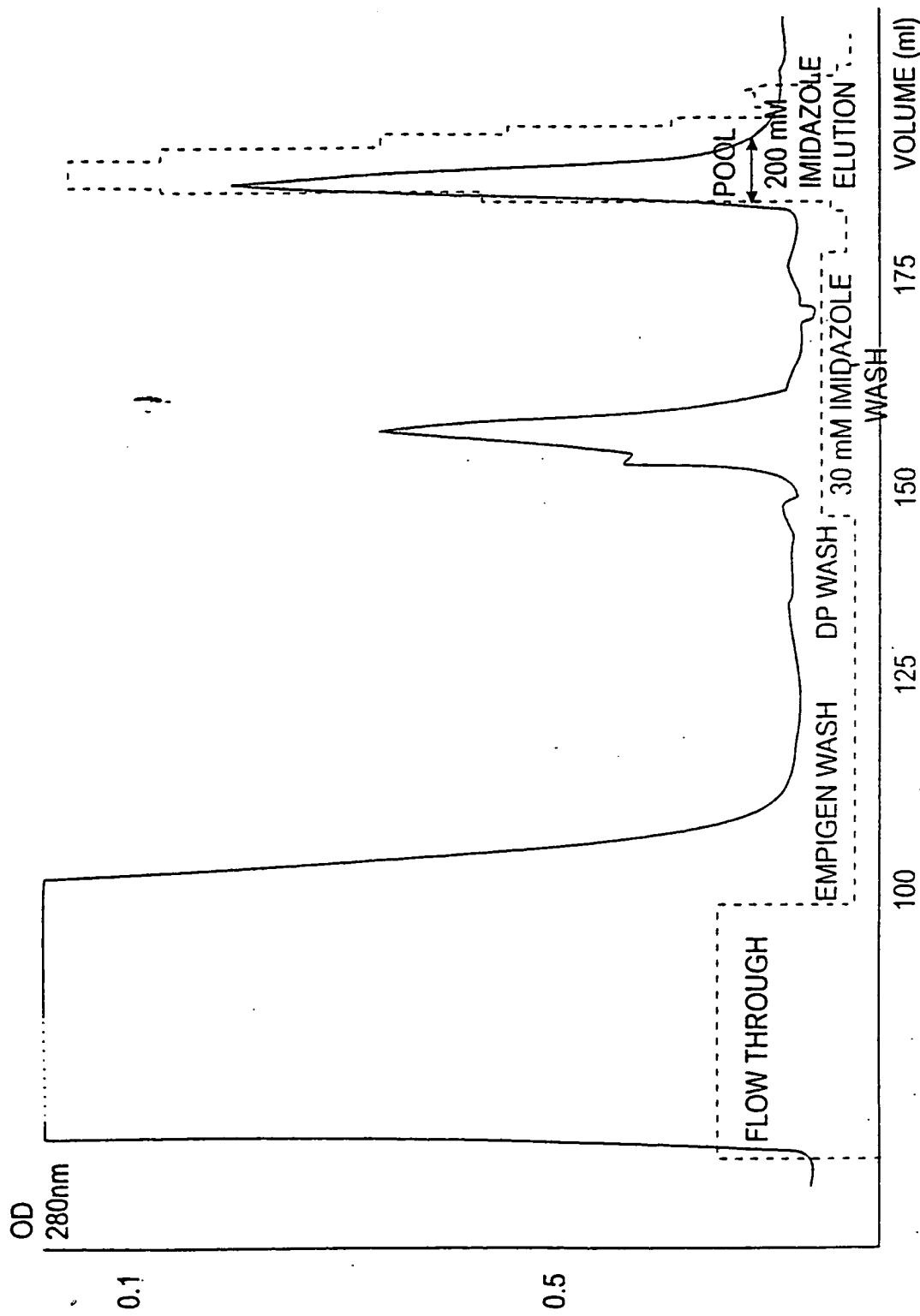
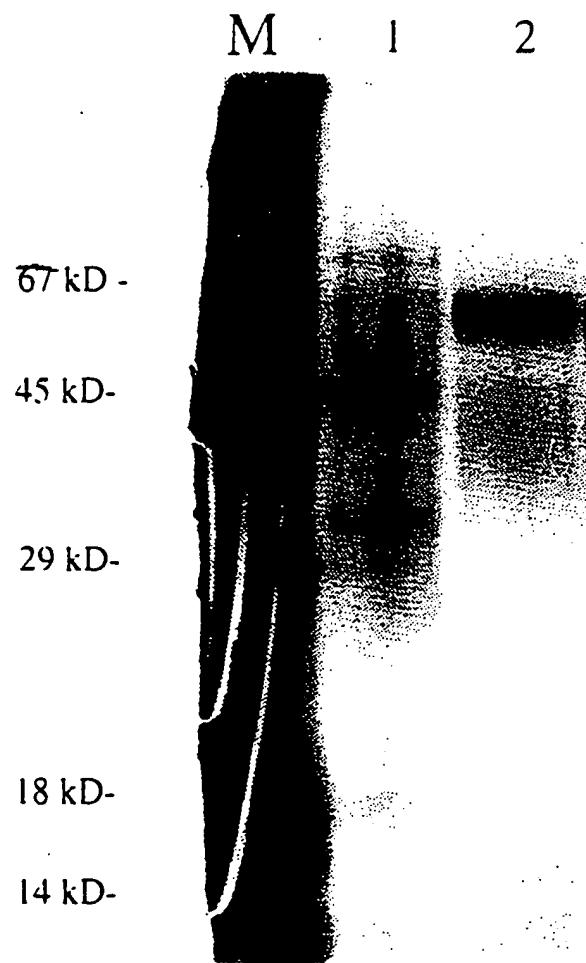


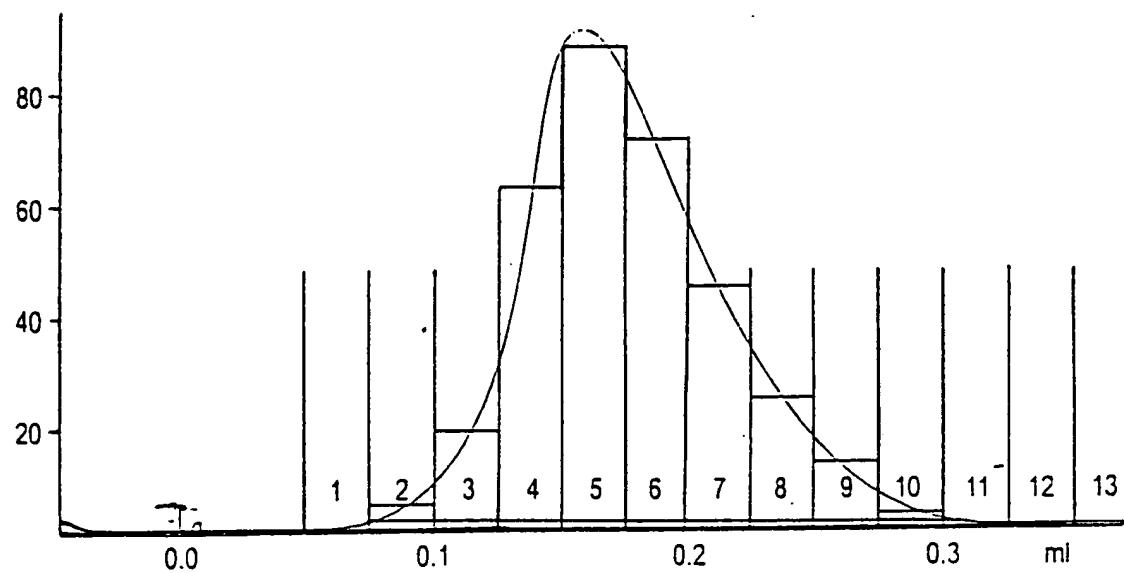
Fig. 32

SILVER STAIN OF PURIFIED E2



1. 30 mM IMIDAZOLE WASH Ni-IMAC
2. 0.5 μ g E2

Fig. 33



No.	Ret. (ml)	Peak start (ml)	Peak end (ml)	Dur (ml)	Area (ml*mAU)	Height (mAU)
1	-0.45	-0.46	-0.43	0.04	0.0976	4.579
2	1.55	0.75	3.26	2.51	796.4167	889.377
3	3.27	3.26	3.31	0.05	0.0067	0.224
4	3.33	3.32	3.33	0.02	0.0002	0.018

Total number of detected peaks = 4
 Total Area above baseline = 0.796522 ml*AU
 Total area in evaluated peaks = 0.796521 ml*AU
 Ratio peak area / total area = 0.999999
 Total peak duration = 2.613583 ml

Fig. 34

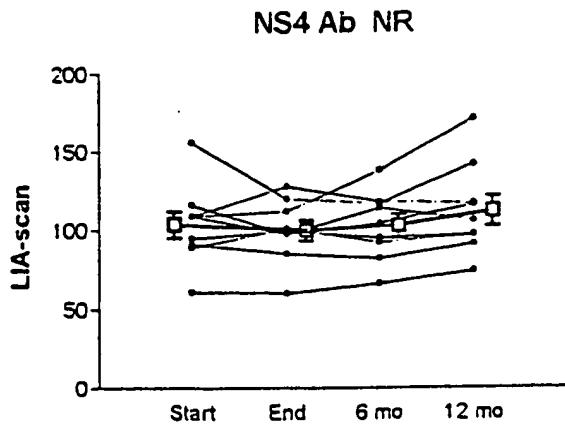


Fig. 35A-1

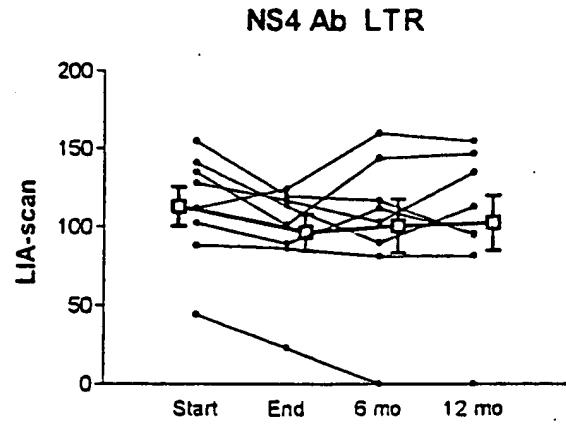


Fig. 35A-2

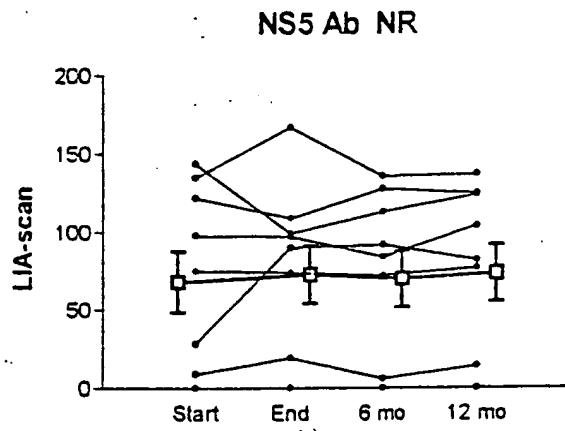


Fig. 35A-3

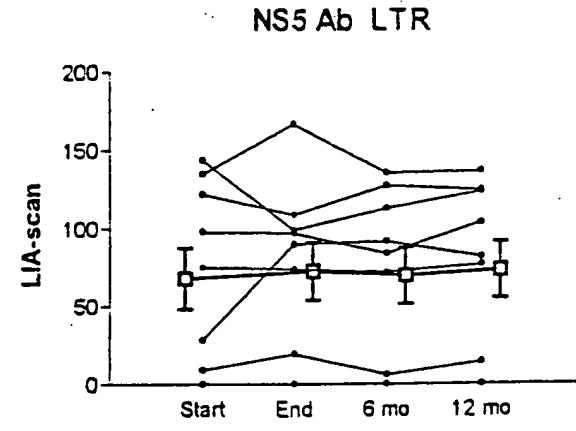


Fig. 35A-4

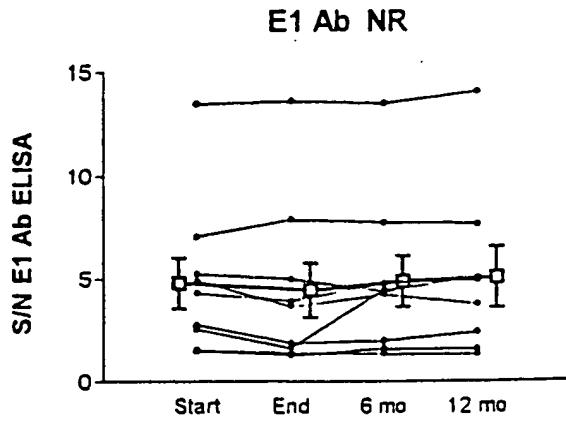


Fig. 35A-5

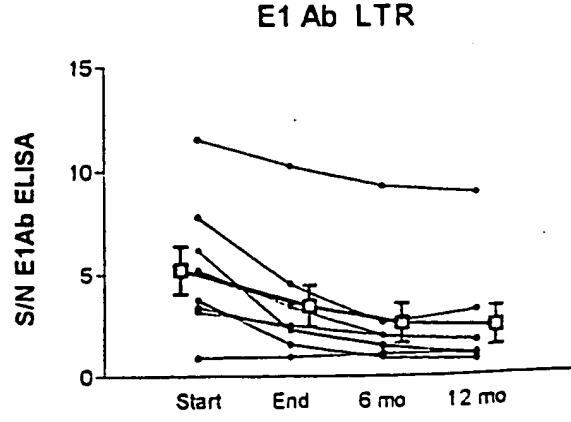


Fig. 35A-6

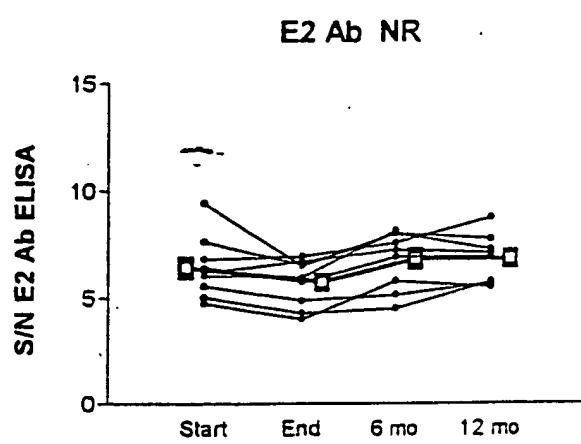


Fig. 35A-7

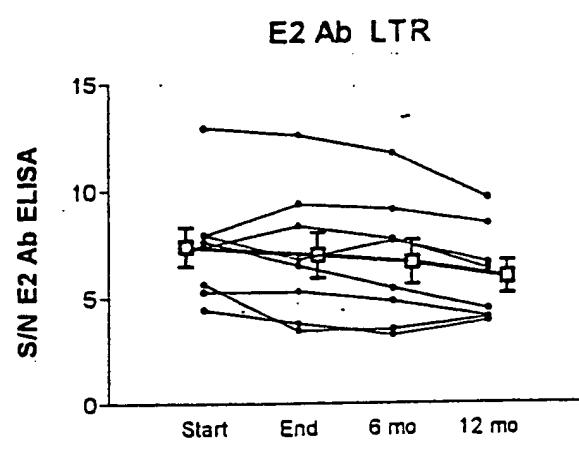


Fig. 35A-8

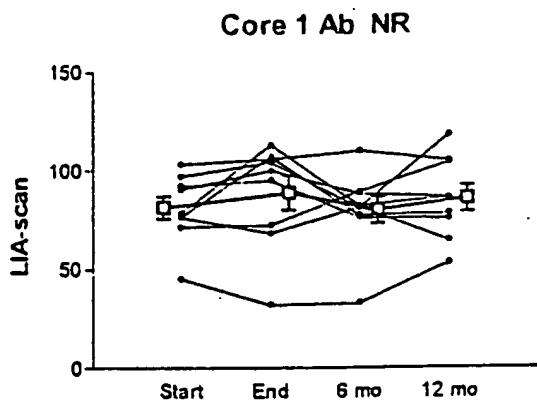


Fig. 35B-1

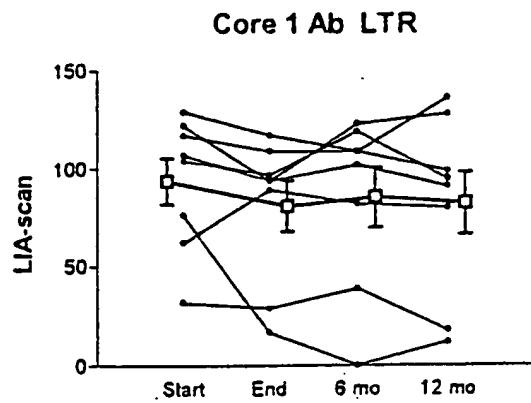


Fig. 35B-2

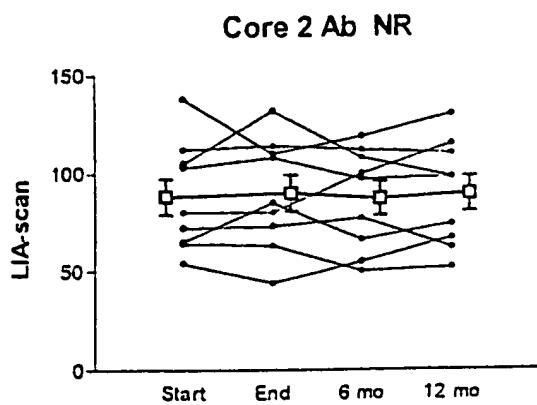


Fig. 35B-3

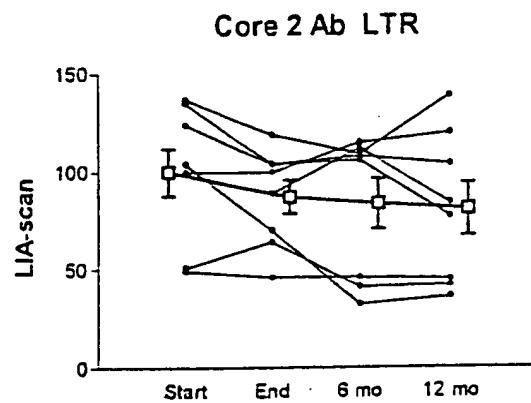


Fig. 35B-4

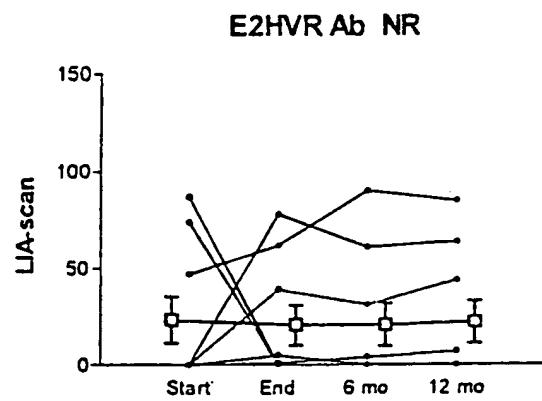


Fig. 35B-5

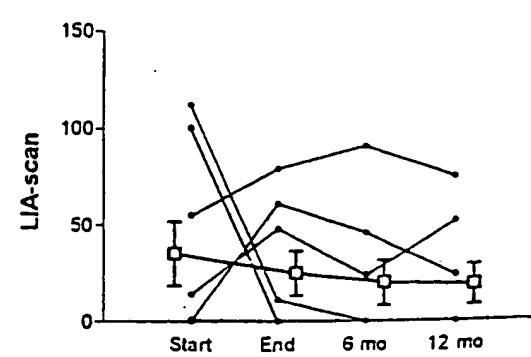


Fig. 35B-6

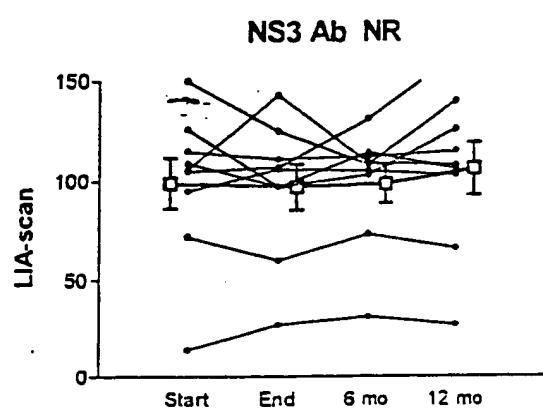


Fig. 35B-7

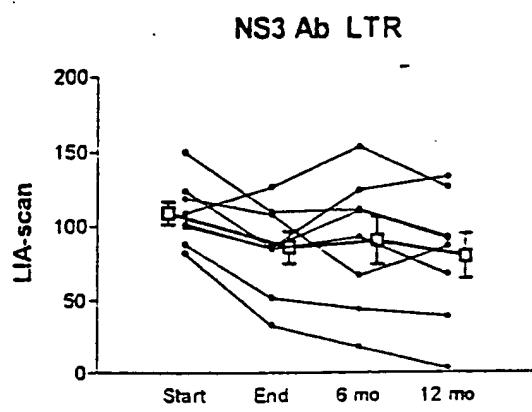


Fig. 35B-8

Fig. 36A

E1 Ab

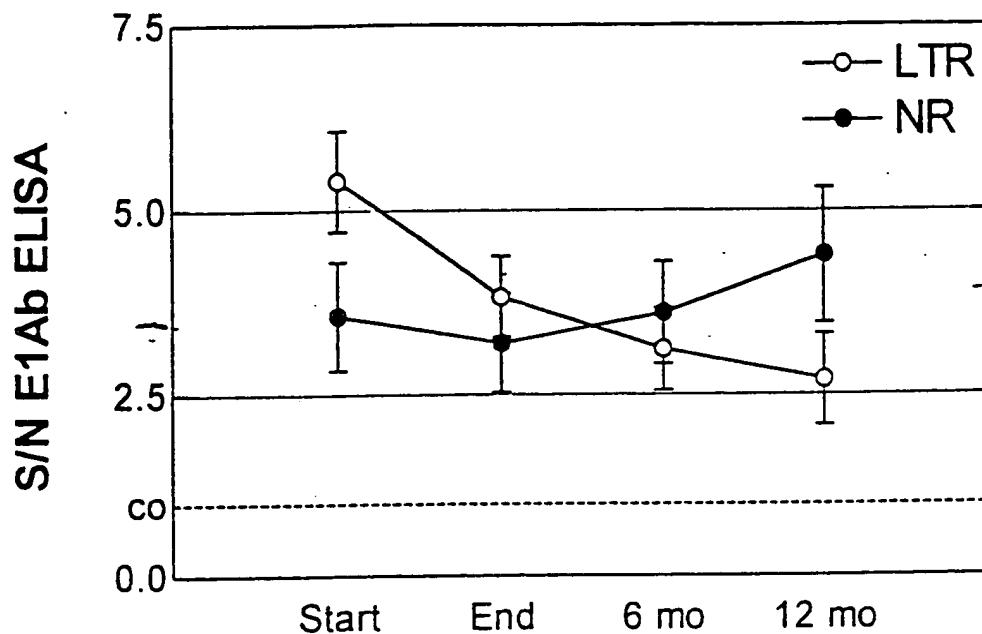


Fig. 36B

E2 Ab

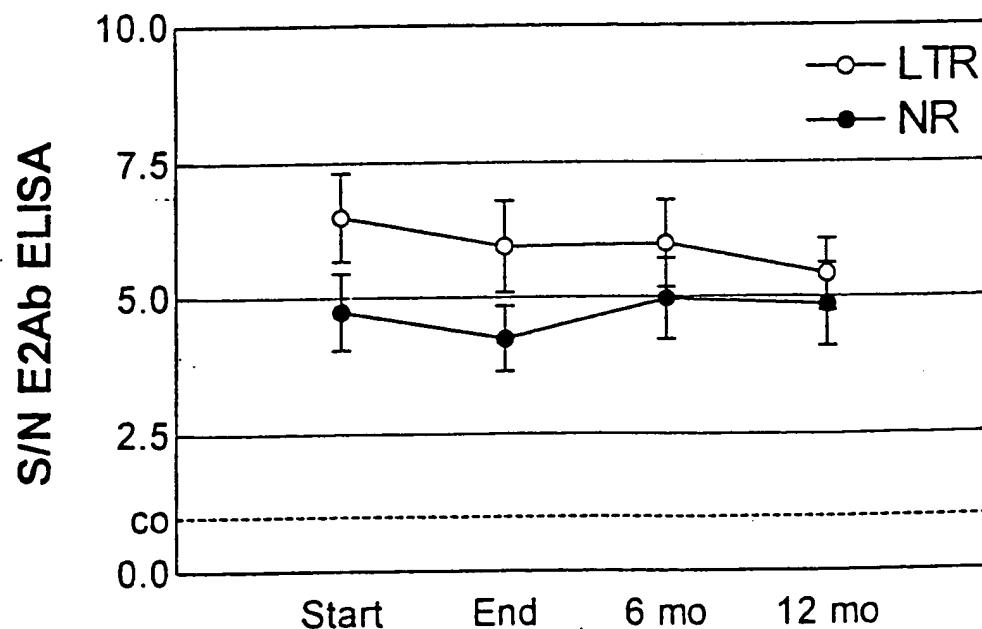


Fig. 37A
Non Responders

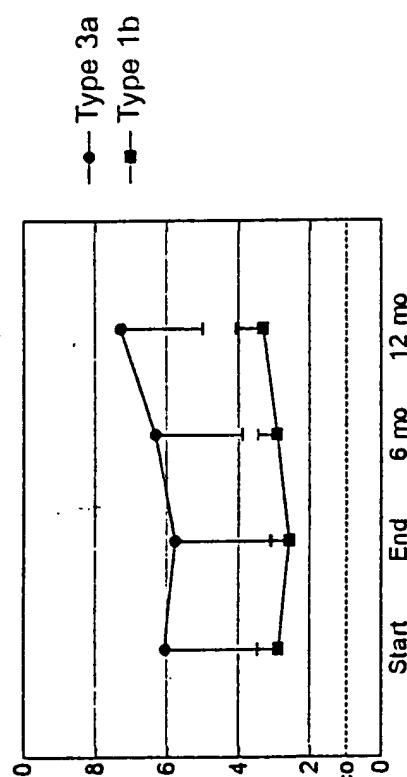


Fig. 37B
Long Term Responders

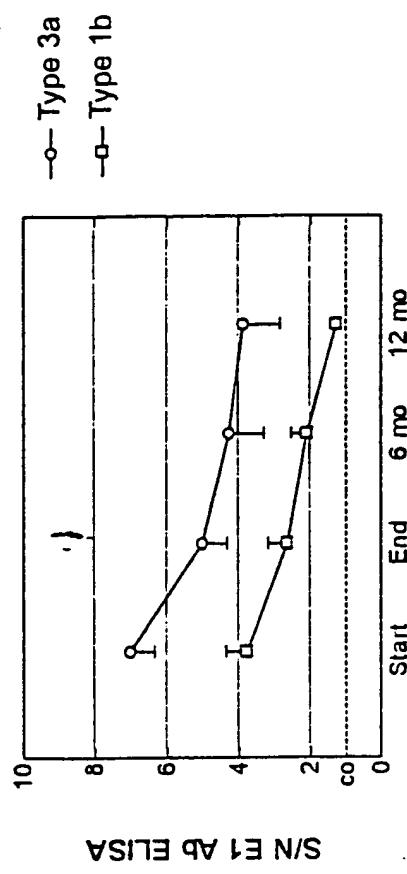


Fig. 37C
Type 1b

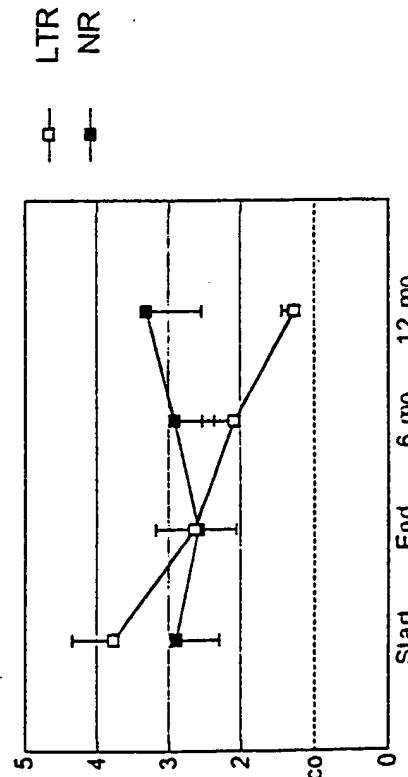


Fig. 37D
Type 3a

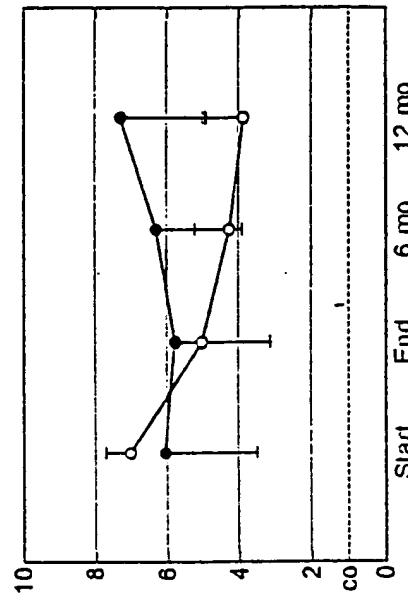
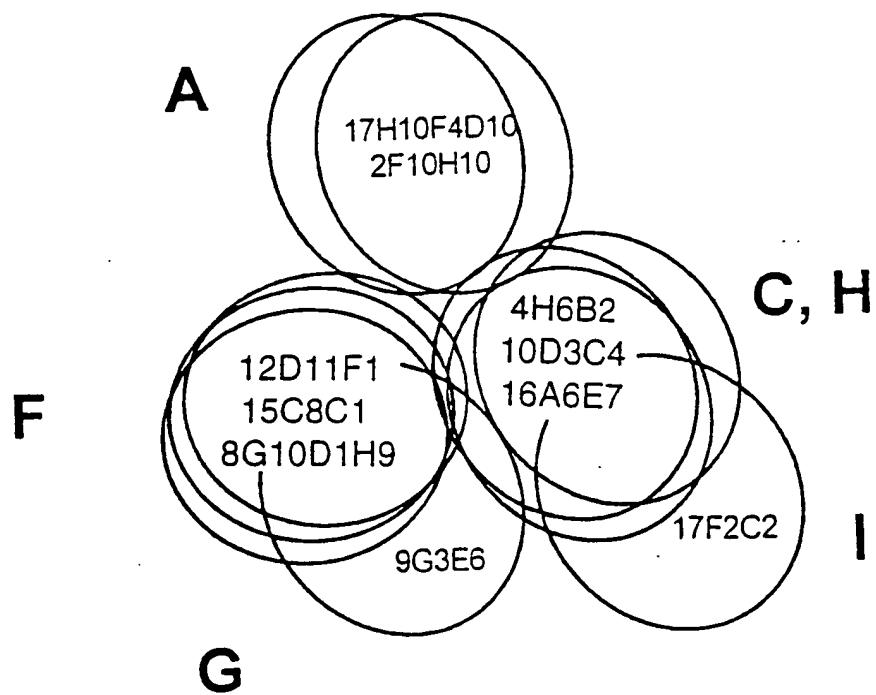


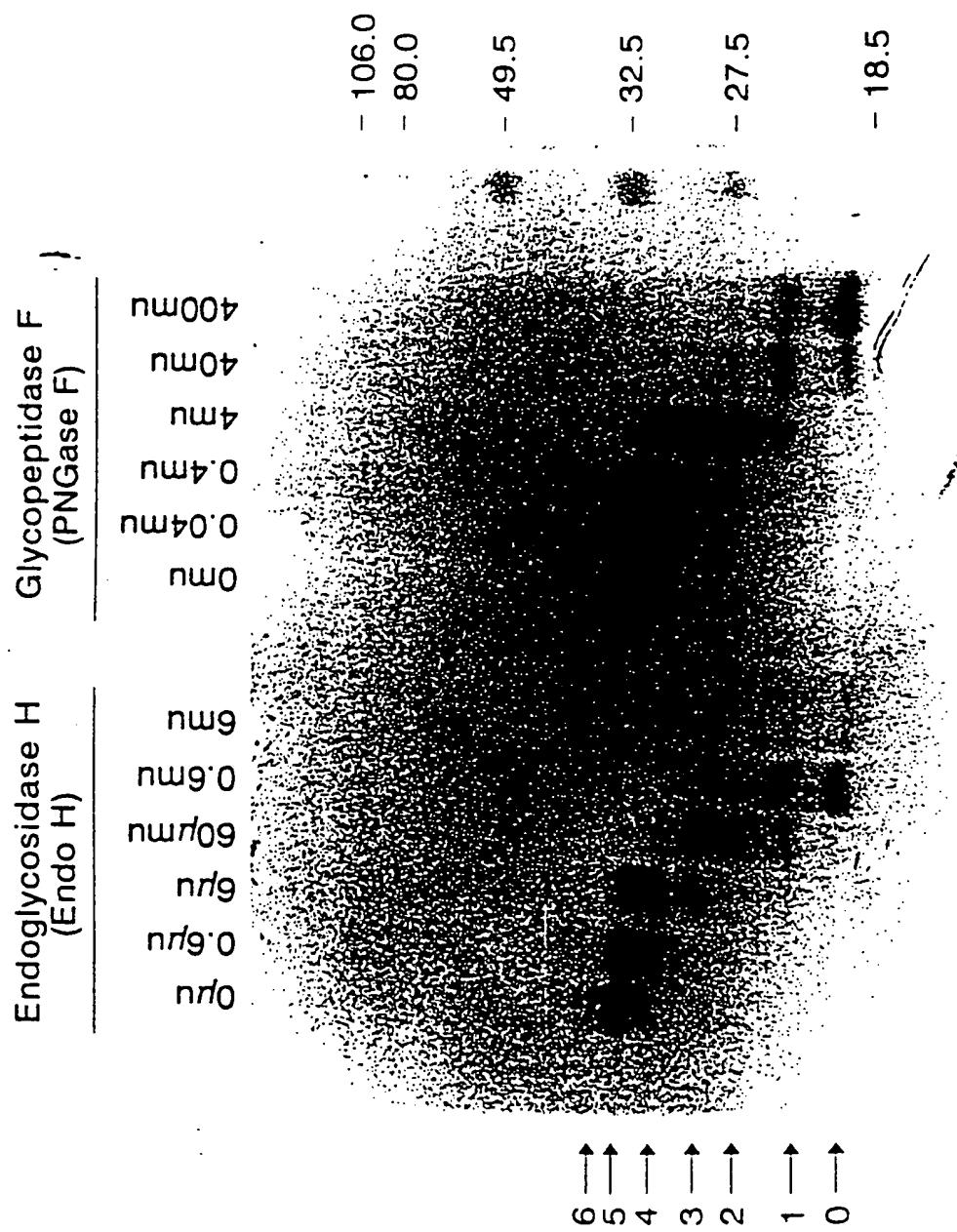
Fig. 38

Relative Map Positions of
anti-E2 monoclonal antibodies



PARTIAL DEGLYCOSYLATION
OF HCV E1 ENVELOPE PROTEIN

Fig.39



PARTIAL TREATMENT OF HCV E2\E2s ENVELOPE PROTEINS
BY PNGase F

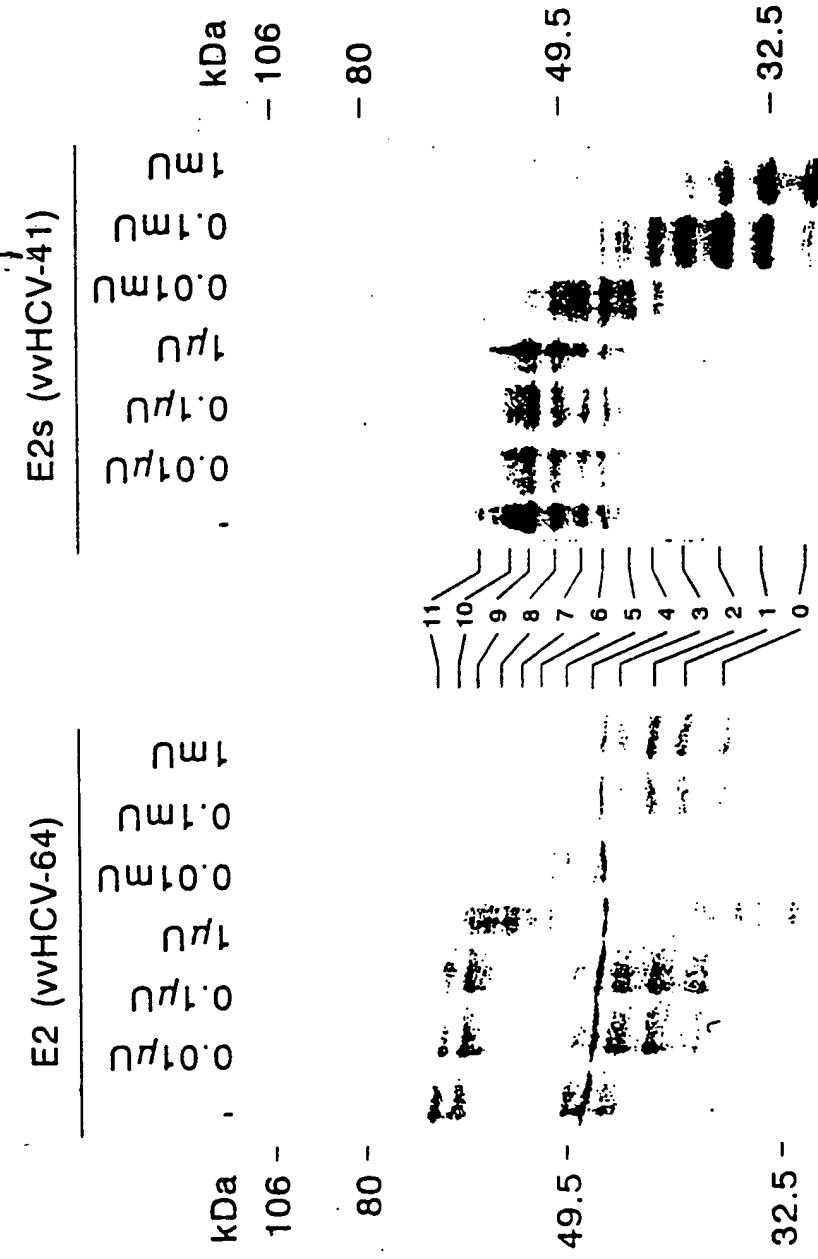


Fig. 40

Fig. 41 *In Vitro* Mutagenesis of HCV E1 glycoprotein

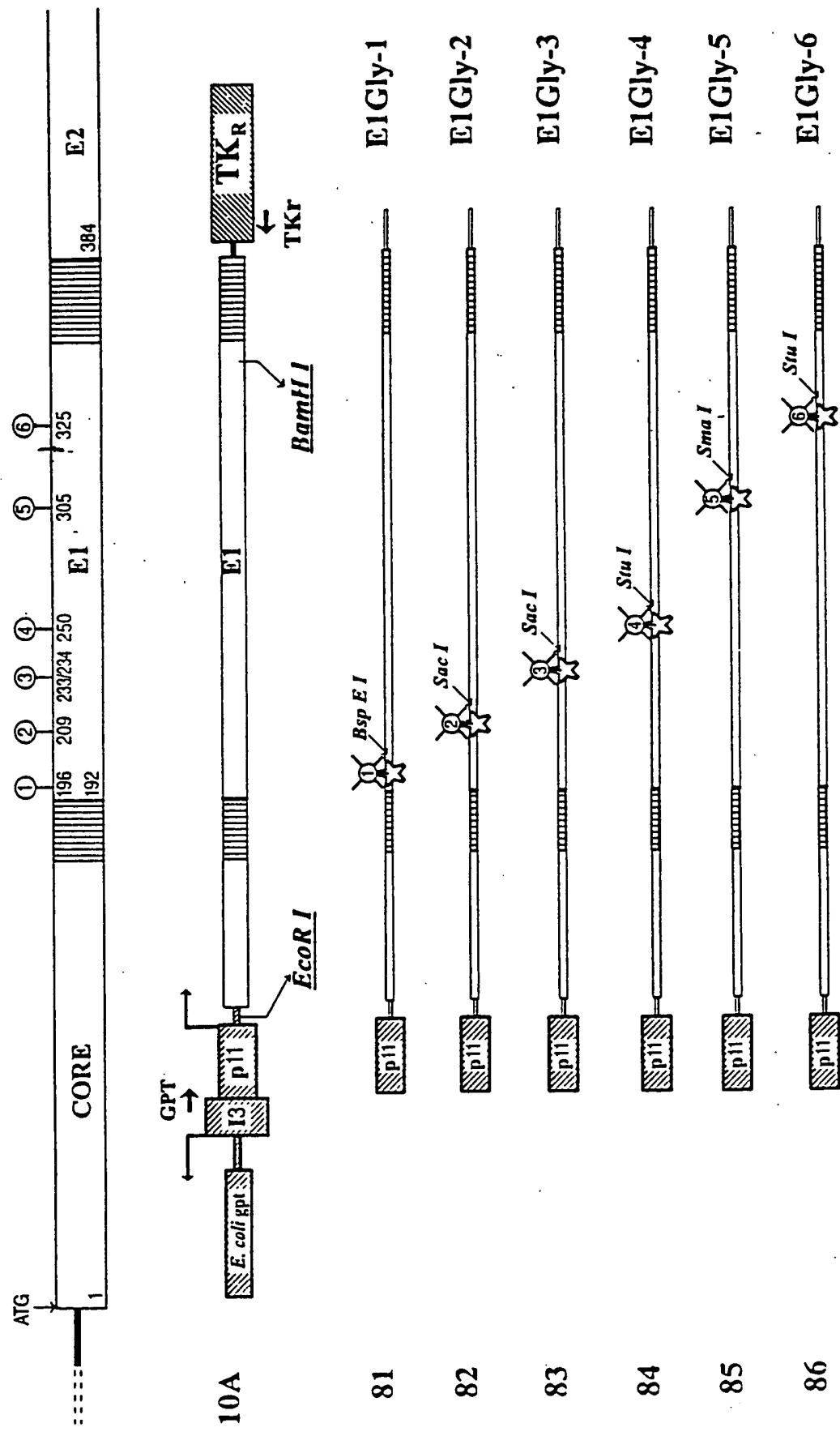
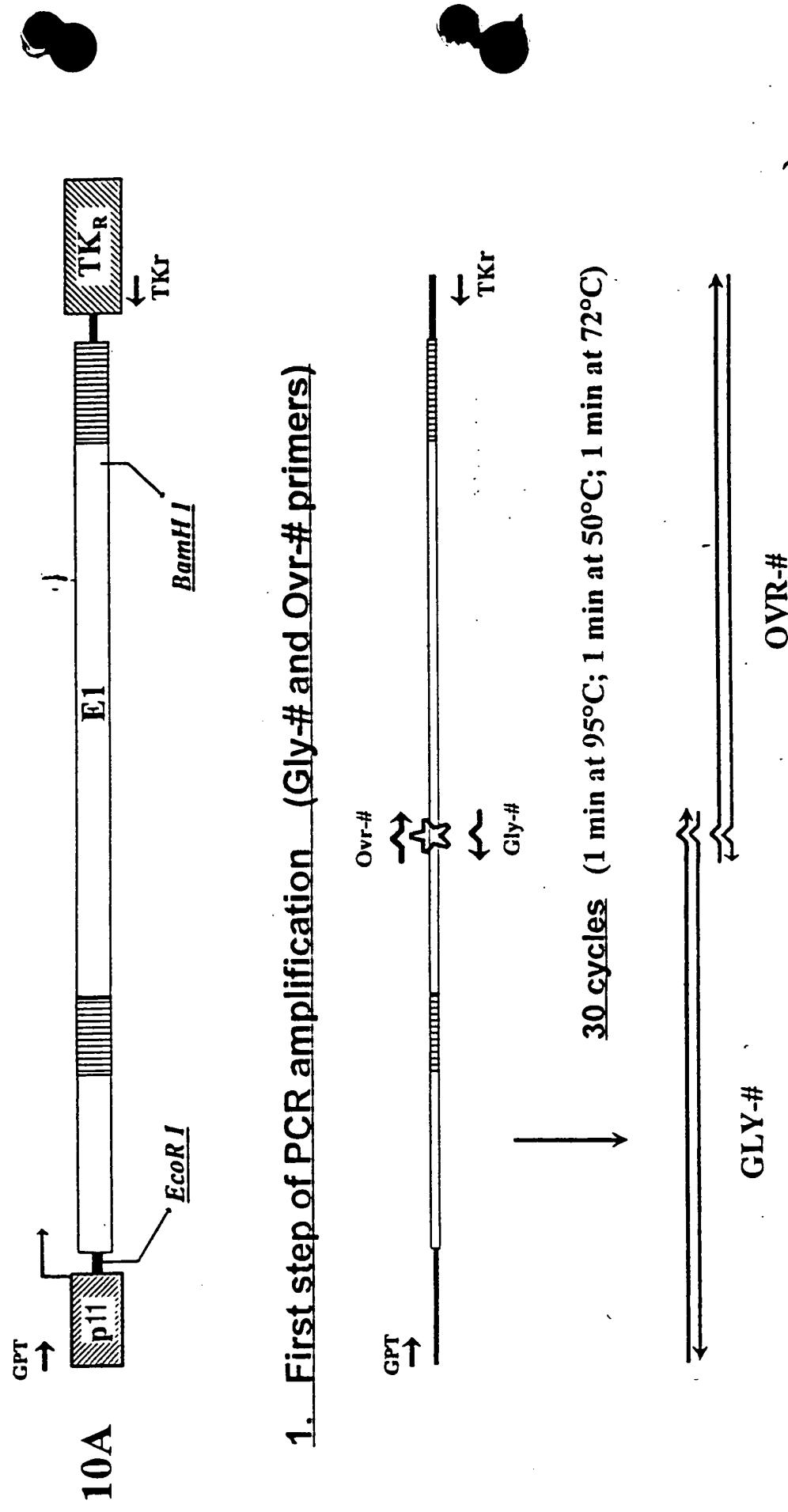


Fig. 42A *In Vitro* Mutagenesis of HCV E1 glycoprotein



2. Overlap extension and nested PCR

a. Overlap extension

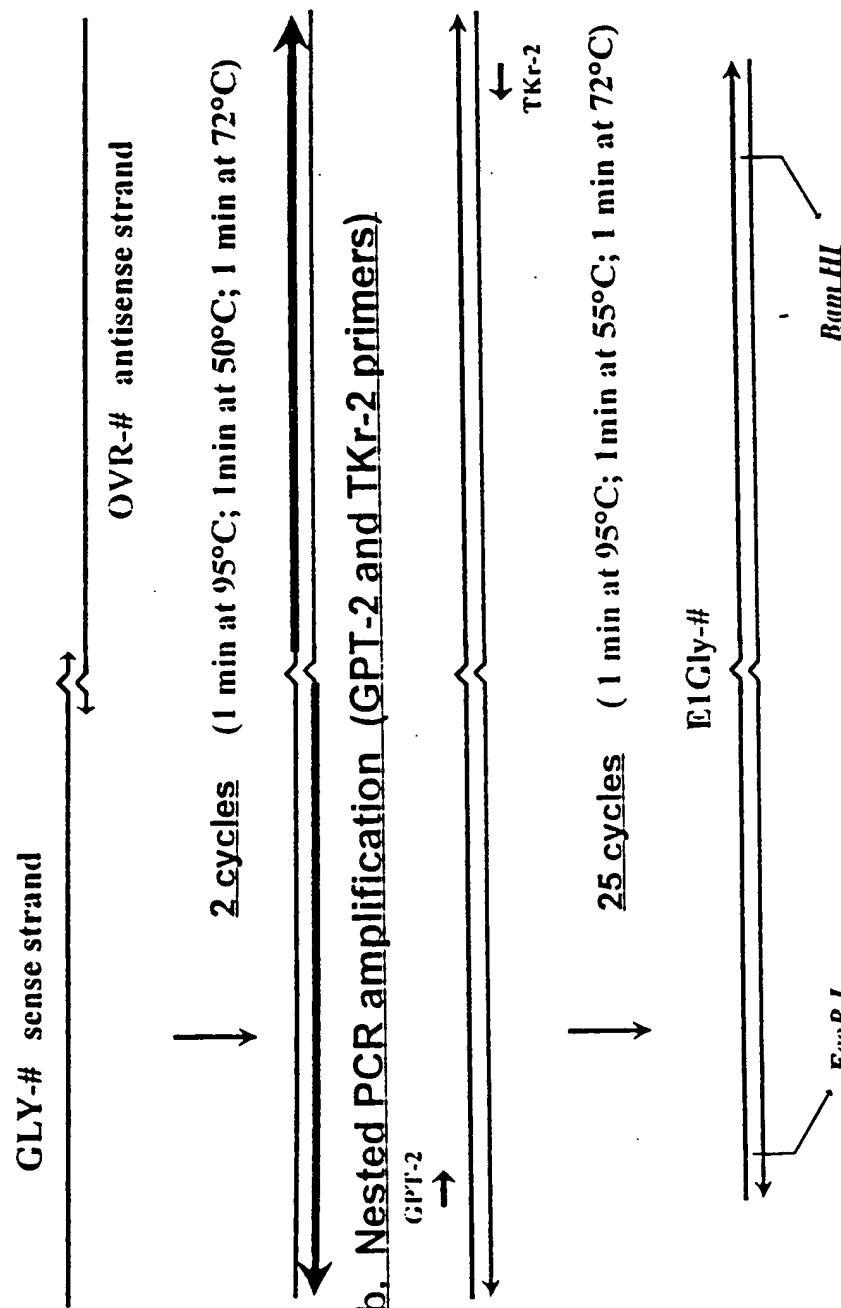
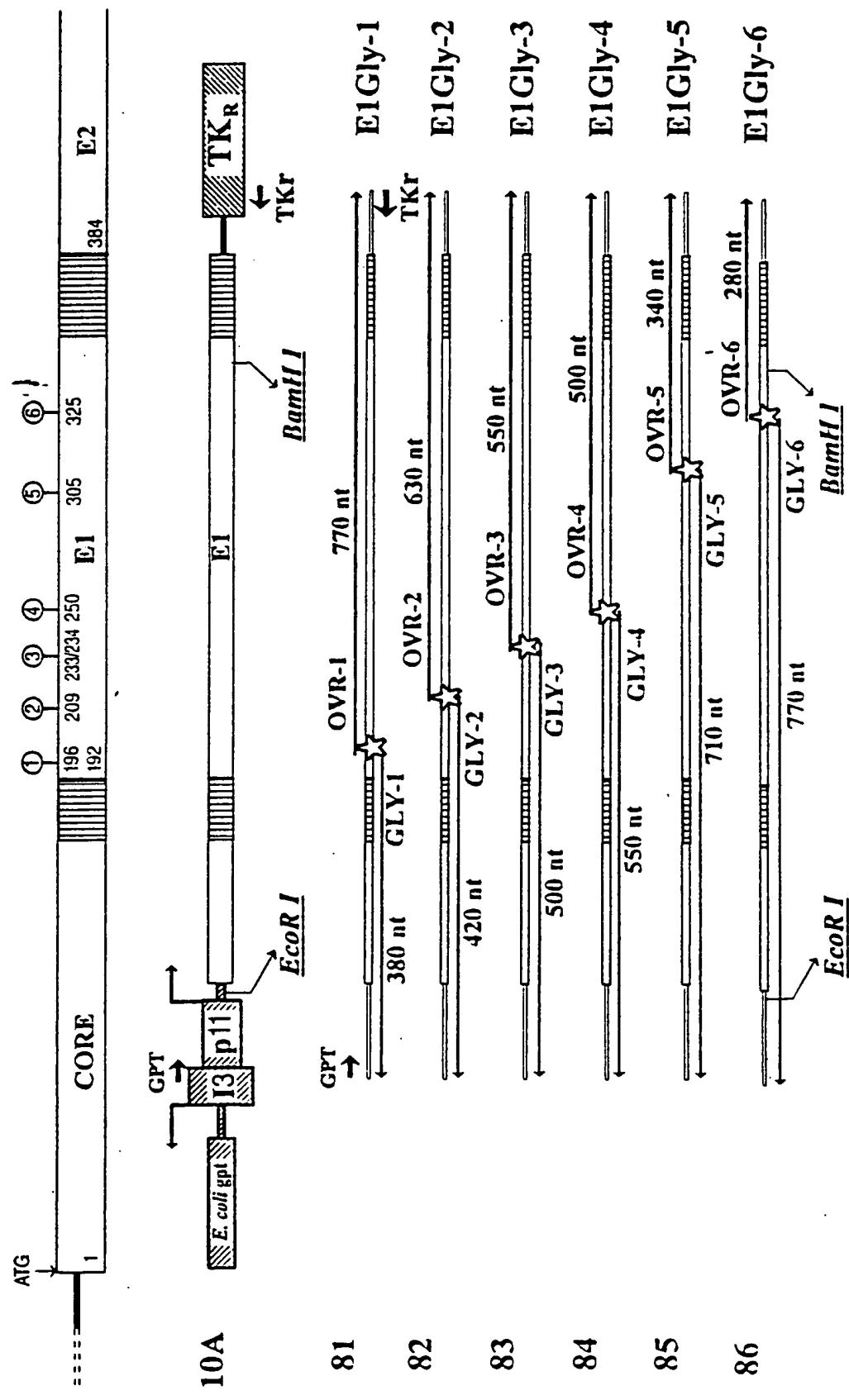


Fig. 42B

Fig. 43 *In Vitro* Mutagenesis of HCV E1 glycoprotein



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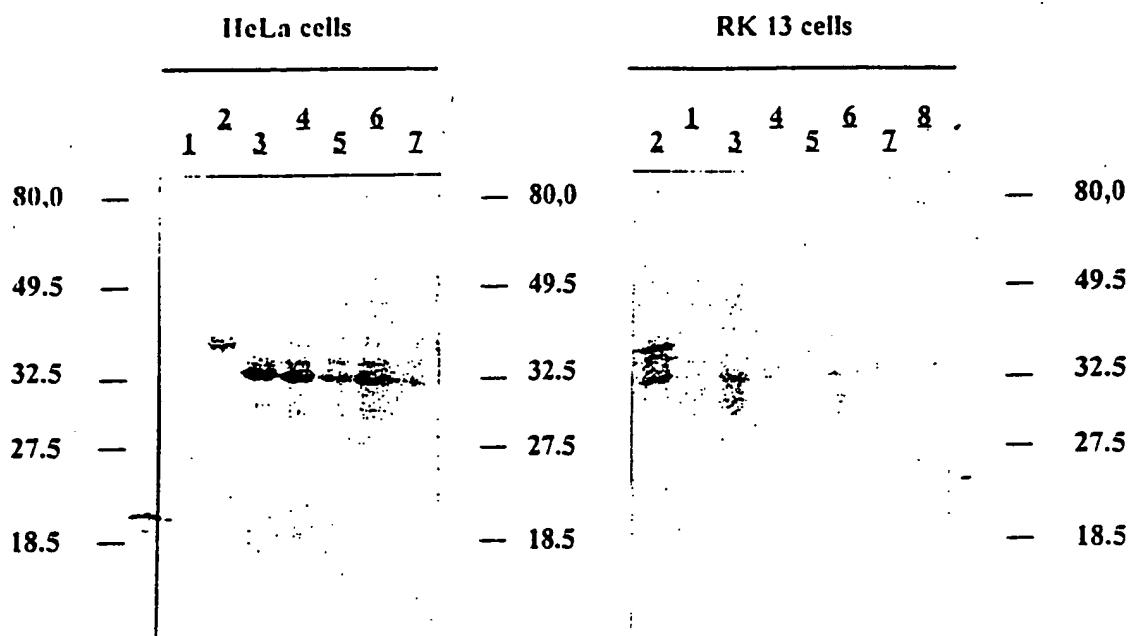


Fig. 44A



Fig. 44B

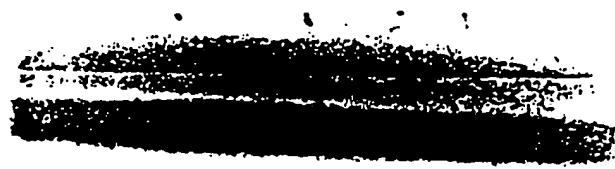


Fig. 45

KDall 9 67 43 29 18

 | | | | |



Fig. 46